(Courtesy L. I. R. R. Experimental Farms.)

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Marketing Horticultural Products

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TABLE OF CONTENTS.

CHAPTER I.

Page.

INTRODUCTION: 7
- Importance of the Problem, ... 7
- Historical Discussion, ... 7
- Complexity of the Problem, ... 8
- General Principles, ... 8

CHAPTER II.

PREPARATION: 10
- General Considerations, ... 10
  - Organization, ... 10
  - Convenience and Method, ... 10
  - Care in Handling, ... 10
- Gathering from the Field, ... 10
  - Time of Gathering, ... 10
  - Picking Vessels, ... 11
  - Gathering from Trees, ... 11
- Packing Sheds, ... 11
  - The Question, ... 11
  - Factors Considered in Answering, ... 11
  - Packing House of an Extensive Grower, ... 11
- Washing, ... 12
  - Necessity, ... 12
  - Methods, ... 12
  - Equipment, ... 12
- Packages, ... 13
  - Considerations in Choosing, ... 13
  - Buying, ... 14
  - Trimmings and Wrappings, ... 14
  - Requirements for Different Crops, ... 14
    - Apples and Pears, ... 14
    - Peaches, ... 15
    - Cherries and Plums, ... 15
    - Asparagus, ... 15
    - Beans and Peas, ... 15
    - Cabbage, ... 15
    - Cauliflower, ... 15
    - Celery, ... 16
    - Cucumbers and Eggplants, ... 16
    - Lettuce, Spinach and Others, ... 16
    - Muskmelons, ... 16
    - Tomatoes, ... 16
- Grading and Packing, ... 17
  - Importance, ... 17
  - Grading, ... 17
    - Establishing Grades, ... 17
    - Maintenance of Standards, ... 17

Page.
Packing, ... 18
Security, ... 18
Good Measure and Honest Packing, ... 18
Placing the Individual Specimens, ... 18
Branding, ... 18
Importance of Organization and Method, ... 18
Supervision and the Piece-work System, ... 19
Packing Fruit, ... 19

CHAPTER III

TRANSPORTATION: 21
Advantage of a Short Haul, ... 21
Transportation by Wagon, ... 21
Cost and Limitations, ... 21
Equipment, ... 21
Choice of Horses and Wagons, ... 21
Maintenance, ... 23
Transportation by Auto-truck, ... 23
Transportation by Rail and Water, ... 23
Short Haul, ... 24
By Railroad, ... 24
By Steamer, ... 24
Long Haul, ... 24
Rates, ... 24

CHAPTER IV

DISPOSITION: 26
Importance, ... 26
Topping the Market, ... 26
Delegation of Selling to Agents, ... 27
Selling to the Consumer, ... 27
Opportunities, ... 27
Methods, ... 27
Advertising, ... 28
The Home Hamper, ... 28
Selling to the Retail Dealer, ... 29
Local Markets, ... 29
Shipment, ... 29
Selling to the Wholesale Dealer, ... 30
The Commission Merchant, ... 30
Selling for Cash, ... 30
Cooperative Associations, ... 31
Storage, ... 32
In Warehouses, ... 32
At Home, ... 32
Canning and Evaporating, ... 32
Factories, ... 32
At Home, ... 32

CHAPTER V

CONCLUSION: 34
Progress in the Past, ... 34
Progress of the Future, ... 34
Value of Progress in Betterments of City and Country Life, ... 34
BIBLIOGRAPHY, ... 35

PREFACE.

It is one thing to produce a good crop of anything grown upon the farm, and quite another thing to place it upon the market in such condition as to be able to secure the most satisfactory price. While this is true as a general proposition, it is especially true of horticultural products. There are few things more attractive than a basket of clean, well graded potatoes or tomatoes or a nice bright bunch of celery or carrots as they are seen in the market; but a poorly assorted basket or bunch of vegetables of any kind offends the eye and repels the buyer.

Realizing that skill in marketing counts for as much, and possibly more than skillful cultivation, arrangements were made with the author, who has made a close study of the question, to prepare a bulletin giving information upon the subject, which it is hoped may prove helpful to those lacking experience in this line.

N. B. CRITCHFIELD,
Secretary of Agriculture.

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Fig. 1. All happy here. (Courtesy Prof. R. L. Watts.)

MARKETING HORTICULTURAL PRODUCTS.

CHAPTER I.

INTRODUCTION.

The success of the modern commercial horticulturist depends upon his mastery of two distinct arts, the art of Production, and the art of Marketing. Each is essential, and yet their problems differ so widely that we seldom find a man who can truly be said to be expert at both. Indeed, many of our leading growers have come to a realization of the fact that either line is sufficiently complex to engage all the energy and ability of a single man, and they have so planned their operations that the whole work of marketing is delegated to specialists, even including gathering from the field. But with most this is not possible, with many, perhaps, not profitable, and so it falls to the lot of nearly every grower of fruits or vegetables to work out for himself the solution of the problems involved in deriving the greatest possible return from the produce which he has succeeded in coaxing from the soil.

Perhaps, before taking up a detailed consideration of marketing methods, it may be well for us to trace some of the factors and conditions that have brought the business of selling from a matter of simple barter to a complex science as difficult and as important as the science of production. In decades past our population was by no means so densely housed as today. A large proportion of our people were possessed of at least a kitchen garden and a few fruit trees, which were ample to supply their limited demands by way of horticultural products. As our cities grew, the garden passed and the urban dweller looked about him for a new source of supply. A few nearby farmers saw an opportunity to increase their income of ready cash by setting aside a portion of a field for a few rows of lettuce, beans, or radishes, or for the planting of several fruit trees whose produce should be taken to the housewife of the city. The marketing of such involved no serious problems, but before many

years passed, complications began to appear. The cities became larger and larger. The town garden became more and more rare. Other farmers saw the opportunity and general farms became market gardens and orchards. Large quantities of produce were to be handled and systematic methods became necessary. Competition became a factor and success answered only to the man who had good goods well graded and attractively packed.

Meanwhile, the demand for fresh foodstuffs grew and the region within driving distance of the city was no longer able to feed it. The railroads must be called upon to aid in the transportation of perishable produce, and the grower must not only have good goods well graded and attractively packed, but it must be so packed and handled as to stand shipment. The ever-growing demand for produce, out of season as well as in season, together with the exceptionally favorable conditions found in some sections, have served to increase the average length of haul. Thus, still more careful packing as well as shipment in refrigerator cars has become necessary.

We are, then, ready to grant the ever increasing complexity of the problem which confronts the horticulturist in reaping the profits of his ability to successfully till the soil. Shall he grow for local or distant market? Shall he retail his goods or sell through middlemen? Shall the wagon be replaced by the more modern auto-truck? What form of package will best serve his trade? Had grading and packing best be done in the field or in a packing house? These and countless others are the questions that he must answer and answer correctly.

In the outset certain general principles, some of which have already been suggested, may be laid down. First, the aim: To derive the greatest possible profit from the products of the farm. Then we may mention five prime considerations which lie beneath the practice of successful marketing.

1. High quality of goods. This is rather in the province of the horticulturist as producer, and it will here be discussed only so far as it is subject to conditions imposed after ripening.

2. The condition of the goods when it reaches the consumer. Nothing is gained by selling high grade produce to the buyer at the home station if that produce is to become worthless in the hands of the middleman.

3. Appearance. An attractive package with fruit well displayed is one of the best advertisements, commanding the attention and the admiration of the prospective buyer.

4. Economy. It is the difference between gross receipts and cost that feathers the farmer's nest. If a fancy package raises the cost as much as it raises the selling price, nothing is gained. And yet, very

Fig. 2. Cutting asparagus on Long Island.
(Courtesy L. I. R. R. Experimental Farms.)

few producers can tell the cost of a package of fruit or vegetables as it leaves the farm. Good accounting is as important to the farmer as to the manufacturer.

5. Alertness in finding the most favorable market. It often happens that one market is glutted with a certain product, while another, not two hundred miles away is offering fair prices.

The subject of Marketing naturally falls under three heads, Preparation, Transportation, and Disposition. It will now be our aim to take up each of these in detail, showing the principles that govern and the factors that are to be considered in solving the problems that arise in connection with each.

CHAPTER II.

PREPARATION.

GENERAL CONSIDERATIONS.

The horticulturist is coming to realize more and more the importance of effective organization of his forces in every phase of his work. At no time is this more important than when produce is being gathered and prepared for market. Time is precious and the crop is perishable. Labor is scarce and expensive. Every move must be made to count. This result is only accomplished when every man fits properly in his place, neither overworked nor loafing.

Closely associated with good organization are convenience and method. Many an hour can be lost in packing with equipment that is not adapted to the work in hand, or that is awkwardly arranged. Every unnecessary motion in handling fruits or vegetables costs.

Careful handling is essential. This is one of the most difficult ends to attain in preparing goods for disposal. There is hardly a gang but includes one or more who insist on dropping apples a foot to the bottom of the barrel, or on squeezing tomatoes too tightly in the basket. Bruises may not appear at once, but the retailer sees a great difference between the carefully handled and the carelessly handled packages. This is a point that must be watched at every stage of the work, in picker, sorter, and teamster.

GATHERING FROM THE FIELD.

Fruits and vegetables must be gathered at the right time. They ripen and soon begin to deteriorate. Fields of such crops as asparagus, early cabbage, tomatoes, berries, and most of the market garden crops should be gone over three or four times a week, selecting the specimens that are just right. Sweet corn, watermelons, peas, and beans may be gathered less frequently. A few, as celery and late cabbage are sometimes entirely harvested at one cutting. Most of the tree fruits are, in common practice, gathered at one picking, though many of the most progressive growers favor two or more pickings, even for winter apples. The Tyson Brothers, extensive fruit growers of Adams county, Pennsylvania, find that the removal of early maturing apples permits those which remain to gain materially in size and color.

Fig. 3. In the newer orchards ladder-picking is reduced to a minimum by heading trees low.
(Courtesy Prof. J. P. Stewart.)

Vessels for picking should be carefully selected. The capacity should be such as to make a convenient load, but not so great that the lower layers will be damaged by the weight. The inside should be smooth to avoid bruising, a point at which many of the coarse oak baskets in common use fail. The handles should be broad and convenient, but not in the way. The vessel should be cheap so that many may be used, thus avoiding dumping. A round bottomed half-bushel basket made from thin flat strips is a favorite for both fruits and vegetables, answering well to the requirements just mentioned. Large wheelbarrows such as appear in the background of Figure 1 are much used for gathering green vegetables. Bushel baskets serve for the same purpose.

Low heading of trees greatly facilitates the work of gathering fruit. Much may be reached from the ground and very long ladders are unnecessary. In some orchards a plank is laid between two ladders. The three-legged step ladder of Figure 4 is stable, convenient, and easily handled.

Many ingenious devices for picking fruit have been patented, but most of them are of little value in the commercial orchard. Bags are generally regarded as being unhandy and as unduly bruising the fruit, although they are used by some extensive growers. The round-bottomed half-bushel basket mentioned above is handy and may be let down to the bottom of a barrel before emptying.

PACKING SHEDS.

Shall produce be graded and packed in the open or in temporary sheds in the field, or shall it be taken to a permanent, well equipped, and centrally located packing house? There are many points to be considered in answering this question. Practice differs widely under different conditions, in different sections, and with different crops. No definite rules can be laid down.

The first factor to be considered is the amount of washing and handling necessary to prepare the crop in question for market. Watermelons require none. Tomatoes are often washed, graded, wrapped, and packed in baskets, and finally crated. In the first case a second handling would be useless, in the latter, a suitable house greatly facilitates the work. Hauling to the shed involves extra handling, but on many farms soft or steep roads prevent final loading in the field. When produce is packed in the field it must be amply protected from the hot sun.

On the farms of Mr. Horace Roberts, of Moorestown, New Jersey, not a basket leaves for market without going through the packing house. On his home farm he has erected a house that is a model of convenience and compactness. Figures 5 and 6 show the general plan. The basement is used for washing peas and beans, for bunch-

ing asparagus, and for storing potatoes. The main floor is about four feet above the roadway on the side where the low wheeled farm wagons are unloaded and about five and a half feet above the level of the loading drive. The floors above are used for the storage of baskets and crates, which are bought by carloads.

Mr. Roberts uses broad, low platform wagons for hauling from the field. The low front wheels permit short turns and the broad tires improve rather than injure the farm roads. About fifty five-eighth bushel baskets are carried without stacking. Such a wagon soon pays for itself in convenience and in labor saved. Muscle used in lifting to a high platform or over an ordinary wagon bed is not well invested.

WASHING.

Most growers agree that washing is to be avoided if it is possible to make the produce attractive without it—this on grounds of cost and of damage incident to the extra handling. On the other hand some contend that there are few crops with which washing does not pay in giving a bright, fresh appearance. The necessity of washing depends upon contact with the ground, upon the nature of the soil, and upon the weather. Roots and salads almost invariably require a bath, while tomatoes and eggplants are often best brightened by a quick rub with a cloth, or even with the bare hand.

Many methods of handling root crops are in vogue. Most growers pull and load on wheelbarrows, washing in the packing shed before tying. About Wilkes-Barre it is a common practice for the puller to carry a bunch of strings in the belt, tying the onions or beets as they are gathered. The bunches are afterward washed with hose and brush.

Peas and beans are brightened and freshened by washing. Shrinkage on the way to market is avoided by packing wet.

Asparagus is sometimes carefully washed before bunching, but the practice of Mr. C. C. Hulsart, of Matawan, New Jersey, is quite satisfactory. As the "grass" is unloaded from the wagon which has brought it from the field, each handful is quickly dipped in a tub of water. The finished bunches are then thoroughly scrubbed.

When tomatoes require washing they are best emptied into a tub of water, gently stirred about with the hand, and lifted out with a sieve. They are sometimes wiped with a cloth before packing, though this is only necessary with clayey soils.

A number of forms of special apparatus have been devised to facilitate the work of washing vegetables. Probably the commonest is a metal-lined trough with faucet and hose connection. Mr. H. B. Fullerton, of the Long Island Railroad Experiment Station, tacks a quarter-inch mesh over the trough and washes almost entirely with hose, as shown in Figure 7.

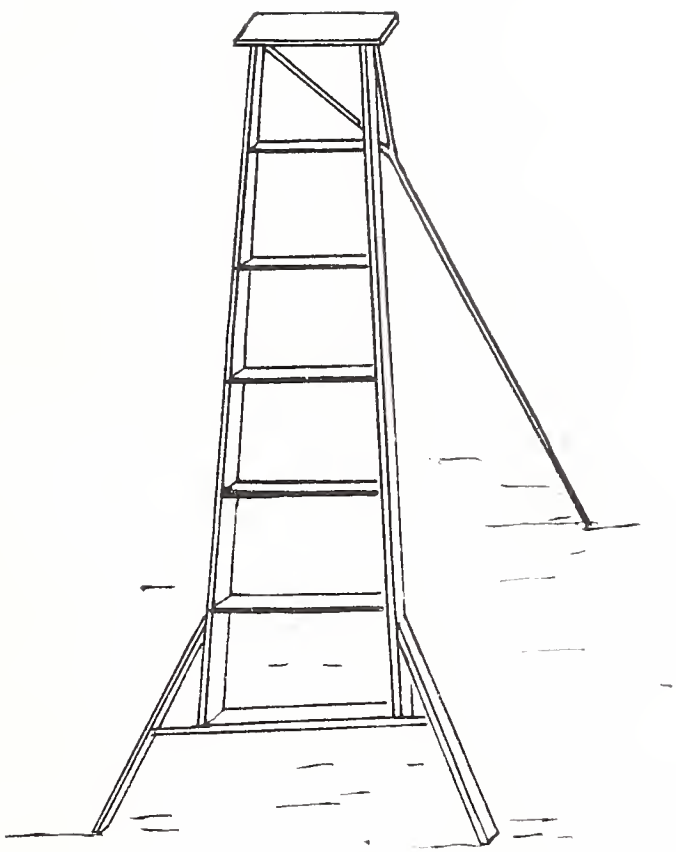

Fig. 4. A ladder for the orchard.

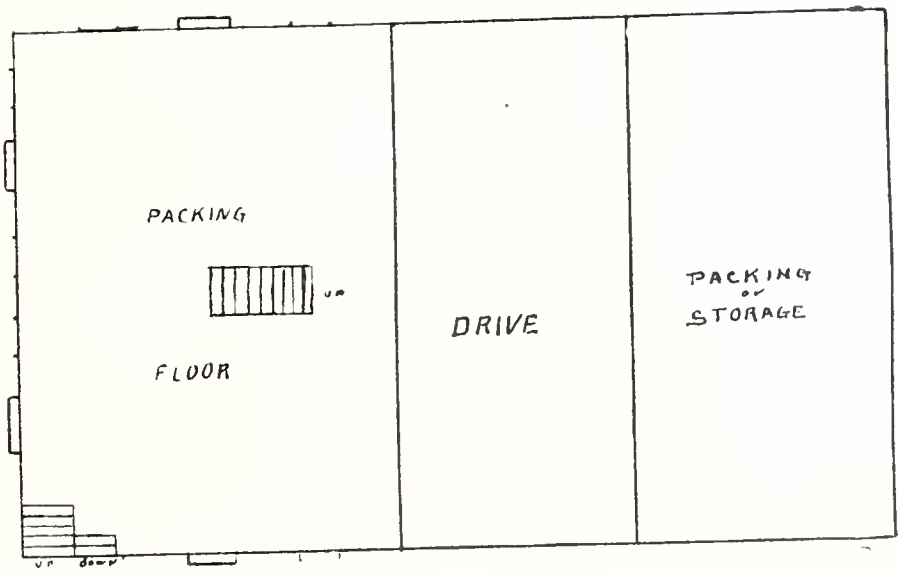

Fig. 5. A New Jersey packing house. First floor plan.

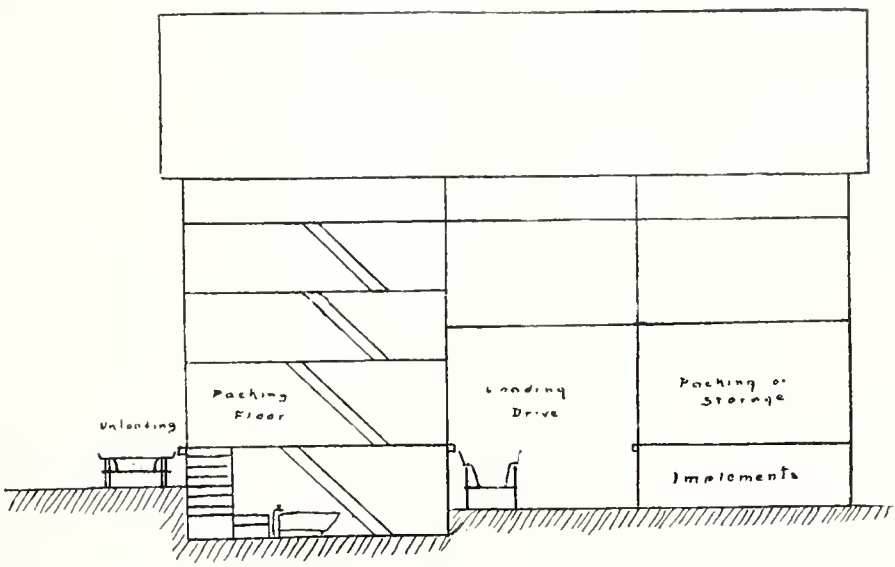

Fig. 6. A New Jersey packing house. Elevation plan.

The most important point in arranging facilities for washing is convenience. Much valuable time may be saved or lost as arrangements are good or bad. Floors should be well drained and are preferably made of concrete. On many farms the place where this work is done becomes a veritable "Slough of Despond."

PACKAGES.

The package is one of the most important factors in determining the price received for fruit or vegetables. In choosing containers for the various crops there are several points to be considered. In the first place, the package that is already standard on the market in question is to be preferred, provided it is desirable in the respects mentioned below.

The second consideration is appearance. A neat, clean, attractive package helps sell the goods. It bears the same relation to high grade produce that a suitable frame bears to a beautiful picture. Some packages are clumsy at best and if used a second time, actually drag down the price of good stuff. The employment of second hand packages is in general to be discouraged. If really neat and fresh looking, the saving in cost may justify their use. Ordinarily they are dirty, much-be-stencilled, and even misshapen. It is better to use a cheap package and let it go with the goods. Wooden packages sometimes vary considerably in color. Uniformity is always desirable, particularly in the smaller sizes.

In the third place, the package should hold full measure. Shy measure is dishonest and never pays. A customer who finds a little more than he expected is a far better advertisement than one who finds a little less.

The smaller packages are, in general, more desirable than the larger ones. Bushels and barrels are always re-measured and the grocer expects a profit for the handling. This profit should be the grower's. A second measuring always involves more or less loss.

Care must be exercised to secure a container that is sufficiently strong and firm to insure safe arrival of the produce at market.

Ease of packing is an important desideratum. Labor is expensive, and when prices are low, a fraction of a cent may mean the difference between profit and loss.

The package should be selected with reference to economical storage of empties and compact loading of wagons and cars. Stacking should not injure the contents.

A convenient handle on a basket is tempting. It seems to say, "Take me home along." When such vegetables as tomatoes, peas, or cantaloupes become cheap, a chip basket holding a peck, neatly packed and branded, serves to stimulate sales. Numbers 1 and 2 and the smaller sizes of Number 9, all in Figure 8, are excellent for this purpose. One who usually asks for a quarter peck or so measured into a paper sack is easily persuaded to take a whole basket.

Having decided upon the packages to be used, estimate the probable number required for the season and buy early. It is well in choosing to select those that come nested or knocked down. Storage room is often at a premium. It is better to put up a simple shed than to expose packages to the weather, even for a few weeks. This is just as important with those that are used more than once as with the new ones. Weather stains are anything but attractive to the buyer. Knock-down crates may be nailed together on rainy days or when work is slack, although lack of storage space may interfere with this to some extent.

If possible, buy in carload lots direct from the manufacturer. Better prices are thus secured and the packages are on hand when wanted. If a full car is not needed, two or three neighbors may combine their orders.

Trimmings and wrappings of various sorts are coming into more and more general use in the packing of horticultural products. The citrus fruit growers have for years wrapped the individual specimens in tissue, often printed with a neat legend. Of more recent years, the producers of apples, pears, eggplants, tomatoes and a number of other crops have adopted the same practice. Fruit boxes are almost universally lined with paper, and lace circles and borders are much used in topping packages of all sorts. Anything that indicates that the packer has gone to extra trouble in putting up the goods impresses the prospective purchaser with the idea that he is looking at an article of exceptional merit. These methods are of especial value so long as they are unique. They will always be profitable but the first men to adopt such practices will reap the greater returns, while establishing a permanent reputation for the best that is to be had in their respective lines. Be it remembered, however, that frills and furbelows are useful only with the best of produce. No amount of paper lace will make second rate goods sell for first quality.

Different crops have widely different requirements in packages. Of recent years there have been notable innovations among the containers used for many of our crops. There also remain in use a great many that are ripe for the discard.

Apples and Pears. For these the double-headed barrel has long been standard, but the bushel box is rapidly gaining ground as a container for strictly high grade fruit. A box of apples often sells for nearly or fully as much as a barrel from the same trees. The Canadian Department of Agriculture states that "The following facts are well established:

1. The highest priced apples are shipped in boxes.
2. The box is the only practical package in which an apple can be transported with any reasonable degree of economy in a fit condition for the highest dessert trade.

Fig. 7. Careful washing pays. (Courtesy L. I. R. R. Experimental Farms.)

3. Only the best grade of apples will pay in boxes.

4. The retail merchants, other things being equal, prefer the boxes for at least a large part of their trade. The auction markets and fruit brokers of Great Britain do not take kindly to boxes."

For fruit at moderate prices, the barrel will likely hold its place. However, the low price market is almost invariably over-supplied, while the highest grade is always in demand.

The standard apple box of Canada is ten by eleven by twenty inches, inside dimensions. The Oregon box is ten and a half by eleven and a half by eighteen inches, inside measure. The top and bottom are of quarter inch stock, the sides of three-eighth and the ends of three-quarter inch boards. The material should be odorless, dressed, and free of splinters. The cost is about thirteen cents per box in the flat.

Peaches are shipped most extensively in conical baskets of three-eighth to five-eighth bushel capacity. Figure 9 shows a type much used about Philadelphia. Round bottom bushel baskets are also used, though these are too large for the best results. For the early crop and for fine fruit, the carrier containing six four-quart baskets (Fig. 8, Nos. 7 and 8), is very desirable and widely used. The four basket chip and the Climax basket (Fig. 8, No. 1), are quite satisfactory.

Cherries and Plums are commonly marketed in crates containing quart berry baskets (Fig. 8, Nos. 5 and 6), in carriers containing eight two-quart baskets (Fig. 8, No. 4), in four basket chips, and in fancy packs in small boxes. The latter weigh from eight to ten pounds and sell at two to five dollars per box. Comparatively few producers continue the use of buckets and the larger baskets.

Asparagus is bunched as indicated in Figures 10, 11 and 12, and is marketed in crates of many forms. Probably the best is one which is a little wider at the top than at the bottom to accommodate the tapering bunches. It holds twenty-four standard three-pound bunches, standing upright on the bottom.

Beans and Peas are often shipped to New York in burlap sacks, a very poor plan. The peach basket or the third-barrel hamper (Fig. 8, No. 3), are far better.

Cabbage. The Southern crop is marketed in crates of three sizes, differing according to locality, and in slat barrels. The late crop is handled mainly in bulk, though it is barreled to some extent.

Cauliflower is barreled by most Long Island growers, although some are wrapping the heads and packing in crates.

Celery is marketed in several types of crates. Kalamazoo producers favor a flat crate holding perhaps twenty-four good stalks. In some sections a frame twenty-four inches square and twenty-

inches deep, lined with pasteboard or heavy paper is packed with stalks standing on end. They may be tied into dozens before being placed in the crate, using raffia or red tape.

Cucumbers, Eggplants, and a number of other vegetables are shipped in hampers holding one-third to one-half barrel. The slat lid is fastened with wire clamps.

Lettuce, Spinach, Radishes, and the various salad crops are marketed in barrels and in baskets of many sorts. The half bushel chip basket (Fig. 8, No. 9), is used to some extent, especially for greenhouse produce. Western New York growers of head lettuce are coming to use square boxes which hold two or three tiers of a dozen heads each.

Muskmelons are sold in bulk, in crates holding about a bushel, and in hampers.

Tomatoes. A great variety of packages is used for the disposal of this crop. The southern growers use one of the best, the six basket carrier, already described. The four basket chip shares this popularity. These two devices, well packed and neatly branded would enable Northern growers to secure better prices, especially early in the season. Philadelphia growers, as well as those about many other cities, pack in peach baskets of various sizes. Though these are sometimes shipped, they are not well adapted to the purpose. Elaborate framing is required in the car and at best bruising is common. New Jersey growers use the crate shown in Figures 13 and 14, holding about twenty quarts. The two outside top slats are not removed for packing. The cleated lid permits the crowning of the top layer, while the rails on the bottom protect the upper fruits when the crates are stacked. This package possesses the advantage of compact stacking, but it is unhandy to pack, gives only fair protection for a tender fruit, over-weights the bottom layer, and does not make an attractive display of the goods. Indeed, retailers invariably repack in smaller baskets. Growers frequently use these packages year after year, making repairs as needed, though new ones cost but about twelve cents. It is needless to say that first class fruit is not given a fair show when shipped in such a crate after it has made a few trips. The drop handle chip basket (Fig. 8, No. 9), is very satisfactory as a gift package for a short wagon haul. They may be secured compactly nested at about forty cents per dozen. They are easily packed and show the fruit to advantage, but they must be carefully handled. A moveable rack such as is shown in Figure 29 is used to support the tiers of baskets on the market wagon. The basket of Figure 15 is used for hothouse tomatoes. It is so proportioned as to stack, when covered, in criss-cross fashion with little loss of space.

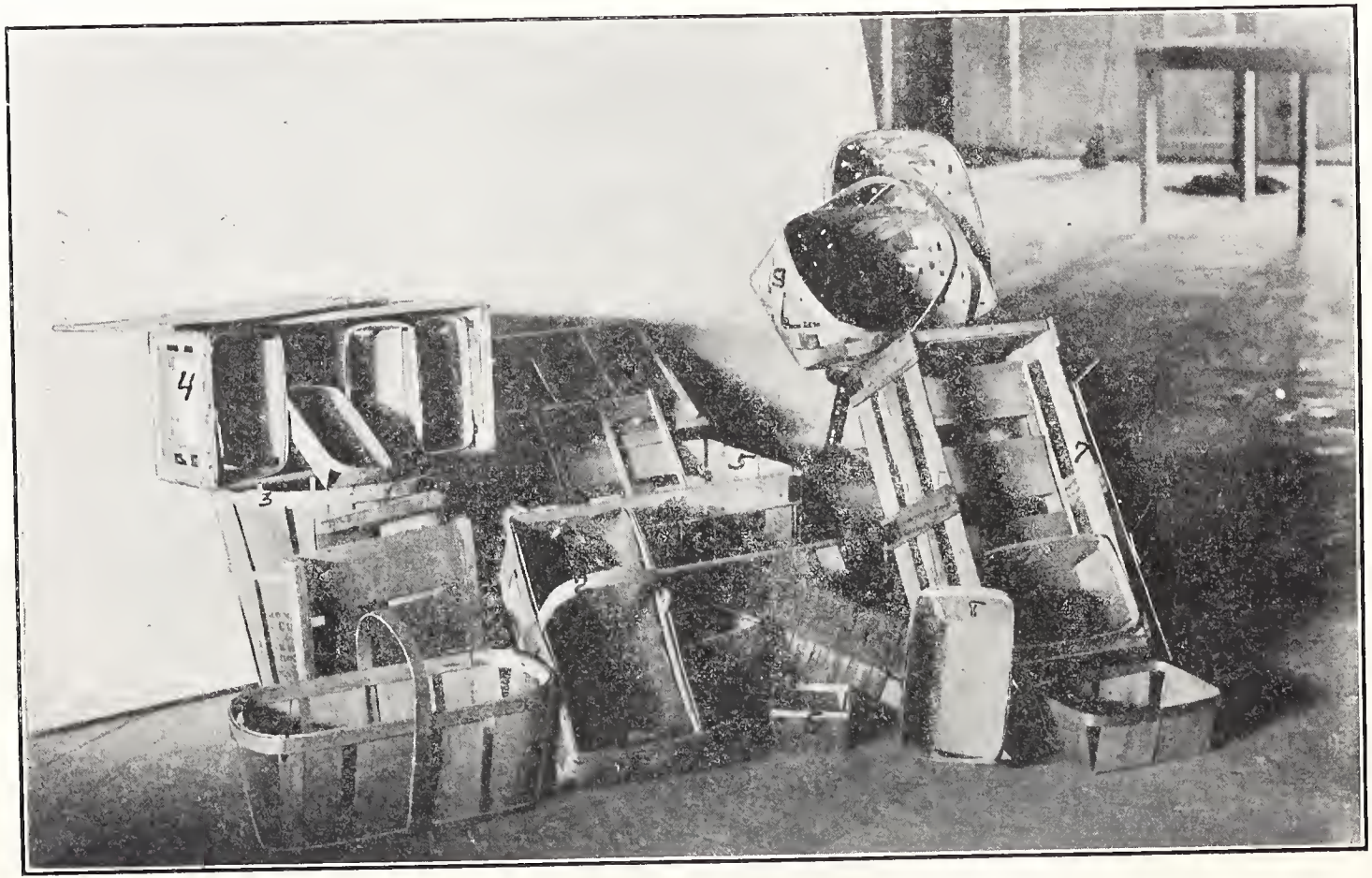

Fig. 8. Some popular packages.

Fig. 9. This basket is much used about Philadelphia. Note the braces. (Courtesy Prof. J. P. Stewart.)

GRADING AND PACKING.

Differences in grading and packing are of sufficient importance to spell the difference between success and failure. Money judiciously expended in this work is returned many fold in profit. Professor Judson, in Idaho Bulletin 54, shows that the profit on a hundred boxes of apples may be nearly doubled by culling to eighty boxes. This is a principle that can hardly be over-emphasized.

As the marketing season opens, it is necessary to determine what grades are to be made and to definitely establish the standards for those grades. Uniformity is the first consideration. Make as many grades as are necessary to attain this end. This principle applies first to quality. A very few soft tomatoes or gnarled apples are sufficient to discount a whole package and a single poor package is sufficient to discount a whole shipment. Its value is determined by the poorest rather than the best. Further, the contents of a package must be uniform in size, shape, color, and ripeness. An even appearance attracts the buyer. Local market conditions must be carefully studied in establishing grades. A system that is the best for one city may be a failure for another. For instance, a foreign population is less discriminating than Americans. On the other hand, there are few markets that will not consume a certain amount of the best, and that amount will surely increase as the public learns the real meaning of quality. The grading may be varied somewhat to suit the season. Fruit for home canning need not be graded so closely as for hotel trade. Yet this idea is often carried too far. The grower feels that as the price drops he cannot afford to be so careful as early in the season. But when the market has slumped it becomes a question as to whether goods is sold at all or not and the high grade goods sell first. There is no time when an attractive appearance counts for more. Furthermore, it is often the case that well packed produce brings an advance over the ordinary sufficient to pay the whole cost of picking and packing. The writer has seen this on the most badly glutted markets. For these reasons, grade high. It pays in nearly every instance.

Having established in his own mind the grades that are to be made, the grower must exercise special care to maintain these standards. He is himself in danger of drifting away from them. The line between firsts and seconds cannot be defined in so many words. The helpers must be carefully and persistently instructed in this matter, both by word and by example, and their work should be frequently examined and criticised. Carelessness on the part of employees spoils many a pack that is meant to be of the best.

The work of packing is usually carried on in connection with the work of grading. Security is essential. The slightest shifting in crate or barrel is likely to result in bruising and subsequent decay. Packages should be filled "just right," making the upper layer high enough that the lid will securely bind the contents, but not so high that fruit will be cut or bruised.

Good measure and honest packing go hand in hand, as two of the best and most lasting advertisements a man can use, provided, of course, his brand appears on every package. The writer knew a grower who laid by the finest tomatoes to be placed along the cracks and on top of the crate shown in Figure 13, filling the remainder of the space with stock which was decidedly inferior. He justified the practice by the statement that it is universal, and that if he graded uniformly, his pack would be discounted on the market by the usual standards, judging from the top layer. This grower, even with such a market, might establish an enviable reputation among the better class of purchasers by labeling his crates with an attractive brand, together with some such phrase as "You see the top—you see all," and then conforming strictly to it. Buyers soon learn to pick out the marks that they find reliable, and are willing to pay more for such goods.

In the packing of almost every horticultural product, modern methods call for the individual handling of each specimen. Dumping of baskets is to be practiced only with the lower grades of such fruits and vegetables as are not easily bruised. This tendency gives opportunity for the proper placing of each specimen, a practice that pays. Firm packing is secured and the layers are faced in such a way that the appearance is attractive to the very bottom.

The example that has been set by Southern and Western growers in labelling is destined to be more and more generally followed. The co-operative associations are doing much for this movement. A South Jersey association has made "Red Star" sweet potatoes famous throughout the country. Among individuals, Mr. Horace Roberts, of Moorestown, New Jersey, is a leader. He markets locally in the reinforced peach basket shown in Figure 9, and his name is neatly lettered on every rim. Hampers of cantaloupes are marked with a neat sticker. Mr. Roberts knows how to pick a ripe watermelon. Each one marketed bears a label guaranteeing the quality and the guarantee means what it says. This suggests an idea that cannot be over-emphasized. Fancy packing and labelling are worse than useless unless the produce is fancy.

Perhaps it is not amiss to again emphasize the importance of organization and method in the work of grading and packing. In the first place, it is the sort of work that offers splendid opportunity for loafing and dawdling. Further, a packer may seem to be busy, using

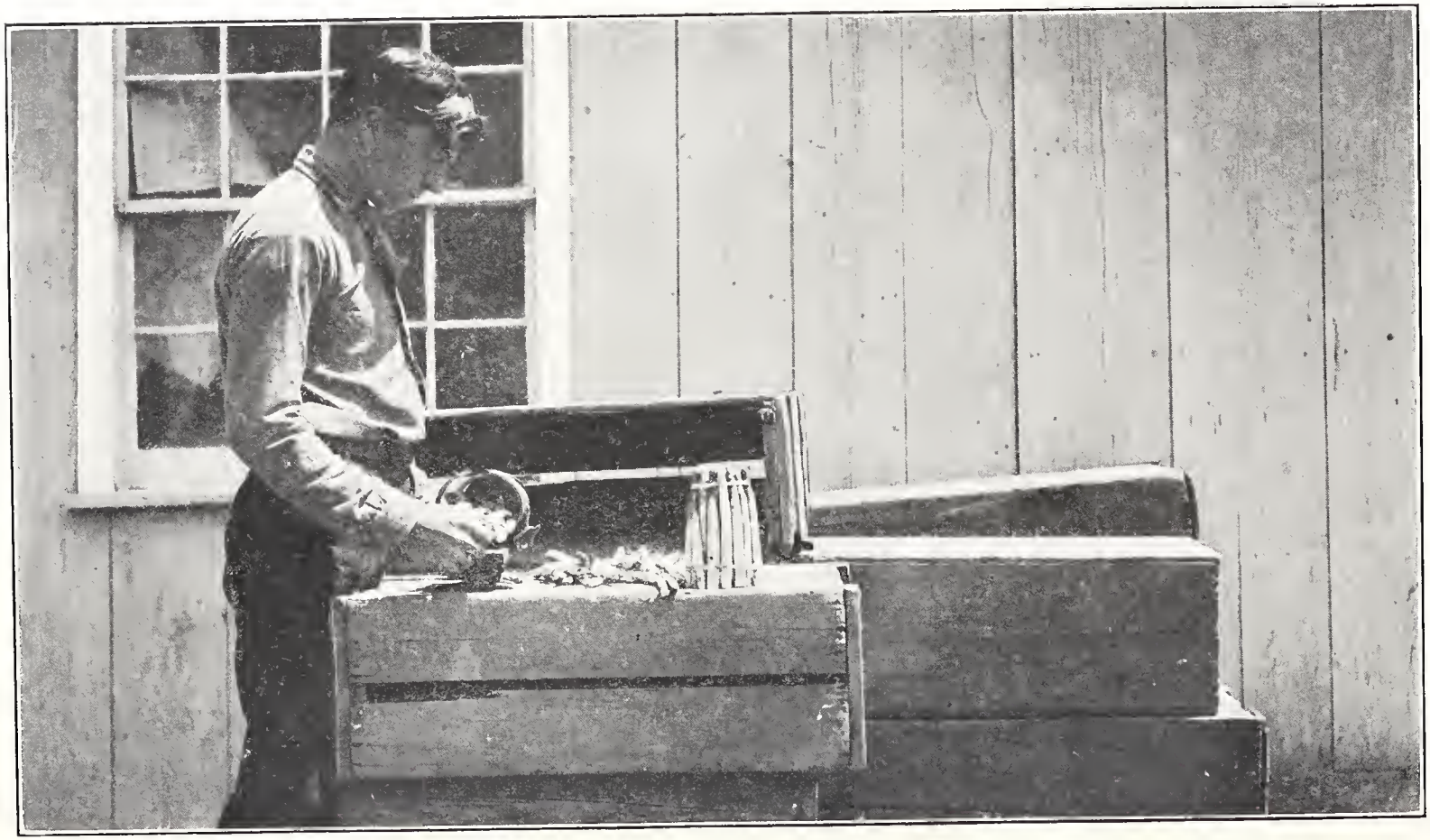

Fig. 10. Bunching asparagus. Filling the buncher. (Courtesy L. I. R. R. Experimental Farms.)

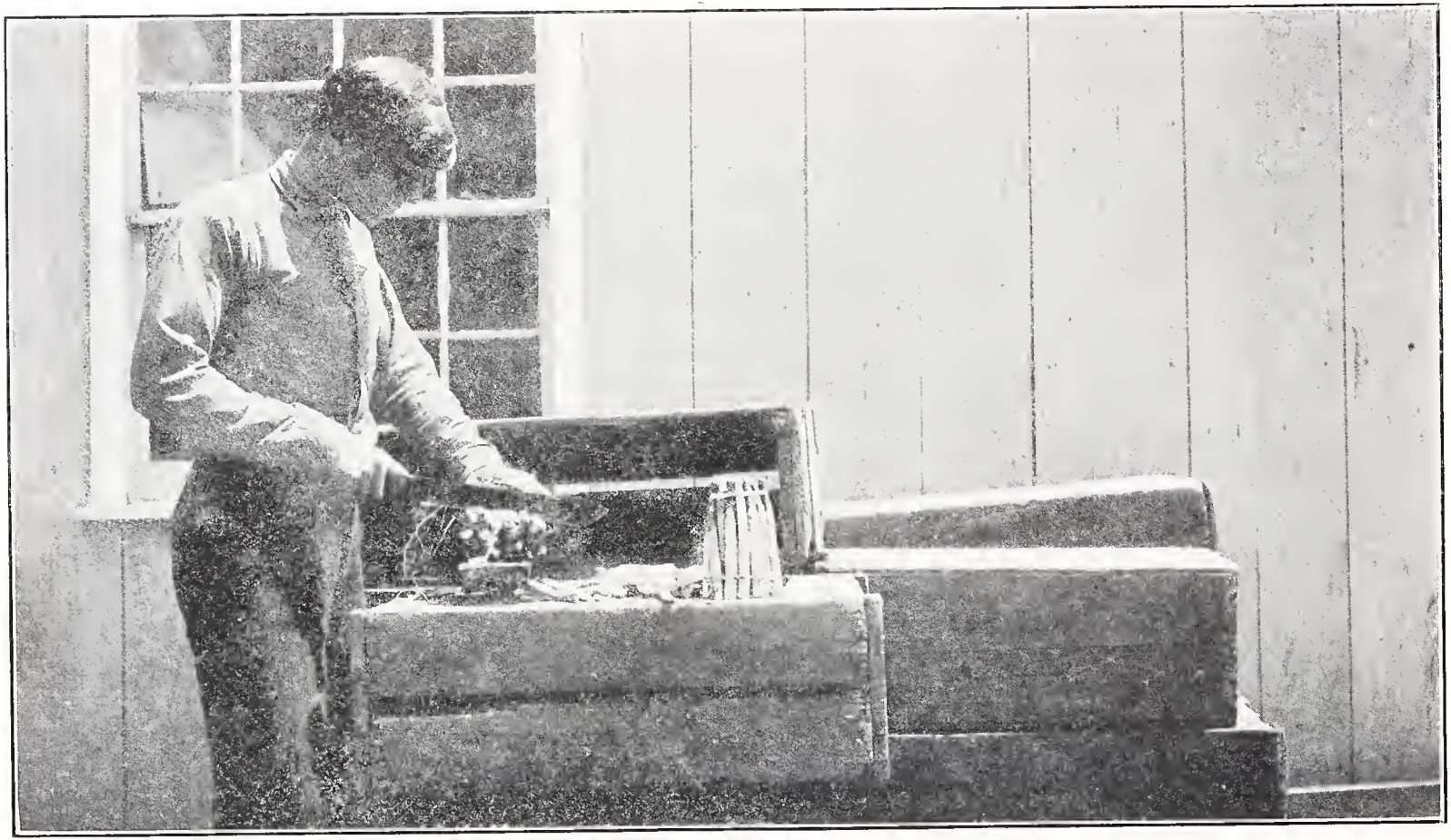

Fig. 11. Bunching asparagus. Trimming. (Courtesy of L. I. R. R. Experimental Farms.)

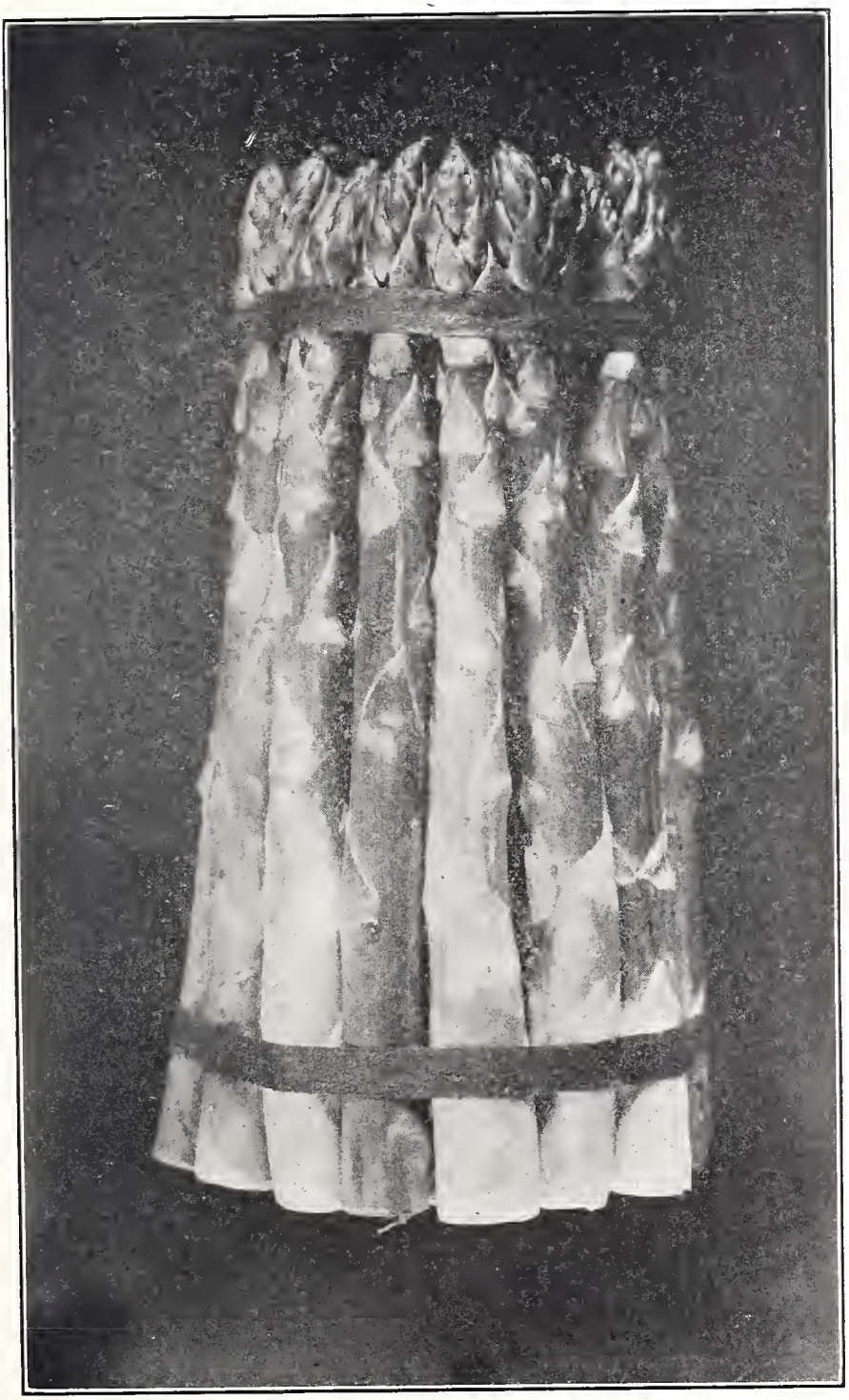

Fig. 12. Perfect. (Courtesy C. E. Myers.)

every energy, while in fact he is accomplishing little because he practices an awkward method. The fewer the motions required to do the work the better. The benches should be of the proper height and the workers should usually be seated. The baskets from which fruit is taken and the packages intended for the various grades should be conveniently arranged. Thus in packing tomatoes in baskets in two grades the arrangement indicated in Figure 16, is found to be the handiest. A candy bucket on the floor serves for the removal of broken and rotten fruits. The prime basket is slanted toward the worker. The tomato is picked up with the left hand, dextrously wiped with a cloth held in the right, while the stem is removed with the little finger of the left, and is placed in the proper receptacle, fitting snugly, with stem end concealed. It can readily be seen that any other arrangement would necessitate awkward movements, as the crossing of hands or changing the fruit from one hand to the other. These details seem simple, but they are often neglected though they are of the greatest importance in securing efficient and economical work.

No considerable number of packers should be allowed to work without competent supervision. Even with an efficient foreman the retail salesman all too frequently finds an imperfect package. The piece-work system is very satisfactory. Let each worker place in his packages a small slip bearing his number. Responsibility is then fixed. In one instance boys were hired at from fifty to seventy-five cents per day for picking and packing tomatoes. Results were anything but satisfactory, the work being poorly done at high cost. The piece-work plan brought about a radical change, securing better packing at lower cost, and at the same time higher wages for the boys.

The barreling of fruit involves certain important details that are not covered by the principles outlined. The fruit is brought to the packers and emptied upon a grading table, such as is shown in Figure 17. This one should have a burlap or canvas lining to prevent bruising. Primes or culls, according to convenience, are removed from the table and the remaining fruit is allowed to run into the barrel. The bag is so manipulated as to prevent damage by dropping. The first process in packing is facing the barrel, which has been set with the top down and the bottom removed. After label and cushion pad are laid, a layer of apples is placed, with stems down to snugly cover the space. The next layer is also faced so that the color shows through the interstices of the first layer. The barrel is then filled, shaking gently as the work proceeds. The last few layers must be so laid that the lid will bear evenly upon all, being about level with the top of the staves, or a trifle higher. The bottom cushion, if it is used at all, is now placed and the head is forced to place with a press. Nailing and hooping complete the process.

The marketing of fruit in boxes has become a matter of such great importance to both producer and consumer that a brief consideration of some of the principles involved and the methods employed is well worth while. Only absolutely sound fruit is to be considered for boxing. Grading is very minute as to size and color. A finished box must show well nigh perfect uniformity. The different sizes of fruit necessitate a large number of styles of packing. These packs are grouped under two general classes, the "straight" and the "diagonal," as diagrammed in Figure 20. The latter is preferred as the pressure on a given specimen is more evenly distributed and there is less danger of bruising. Many packers have abandoned the straight pack and use boxes of two forms to accommodate all sizes. The dimensions of these are $10\frac{1}{2}$ x $11\frac{1}{2}$ x 18 inches and 10 x 11 x 22 inches, inside.

Boxes are always lined with paper and cards are sometimes placed between tiers. The box is so packed that, when nailed fast, the top and bottom will each bulge three-quarters of an inch. The lid is clamped to the box in a specially devised press while it is being nailed.

Many of the objections to box packing are due to the fact that the work is not properly done. Thus the box of Figure 25 contains excellent fruit, but it would be almost unmarketable, as it is not full, and the bottom is too thick to permit a bulge.

The work of packing is certainly awkward to the unskilled hand but practice brings the skill in sight and judgment and action that is necessary before ideal results can be obtained.

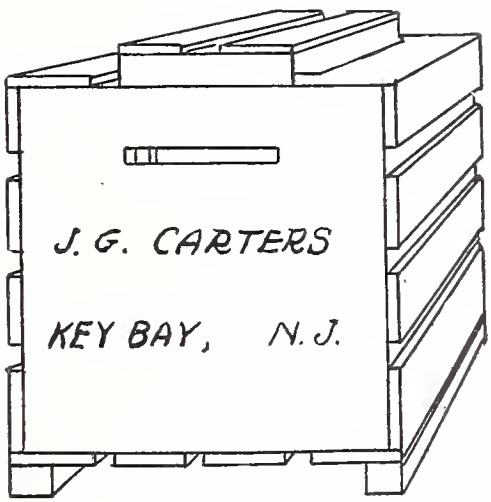

Fig. 13. The New Jersey tomato crate.

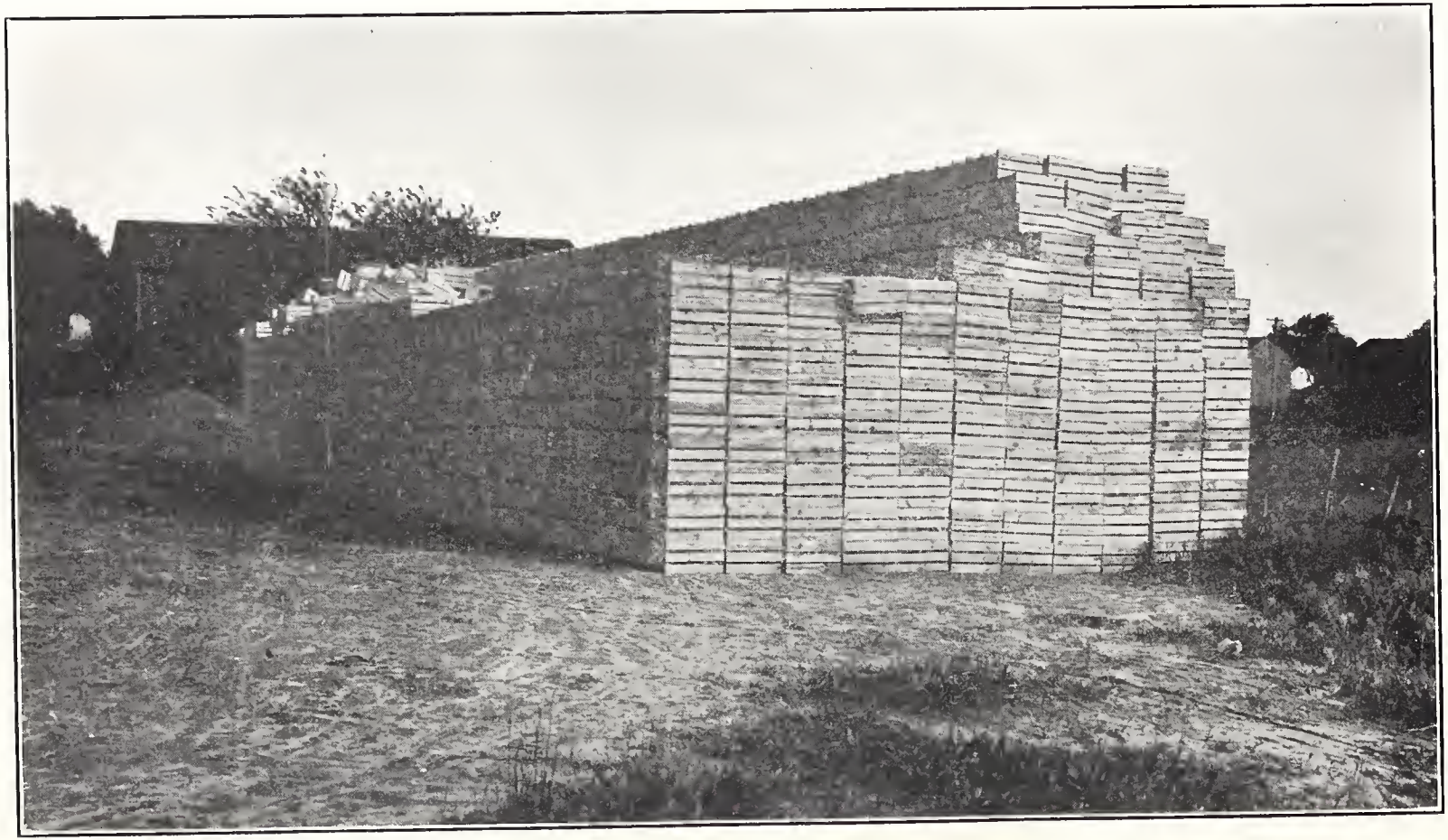

Fig. 14. Waiting for the crop. (Courtesy Prof. R. L. Watts.)

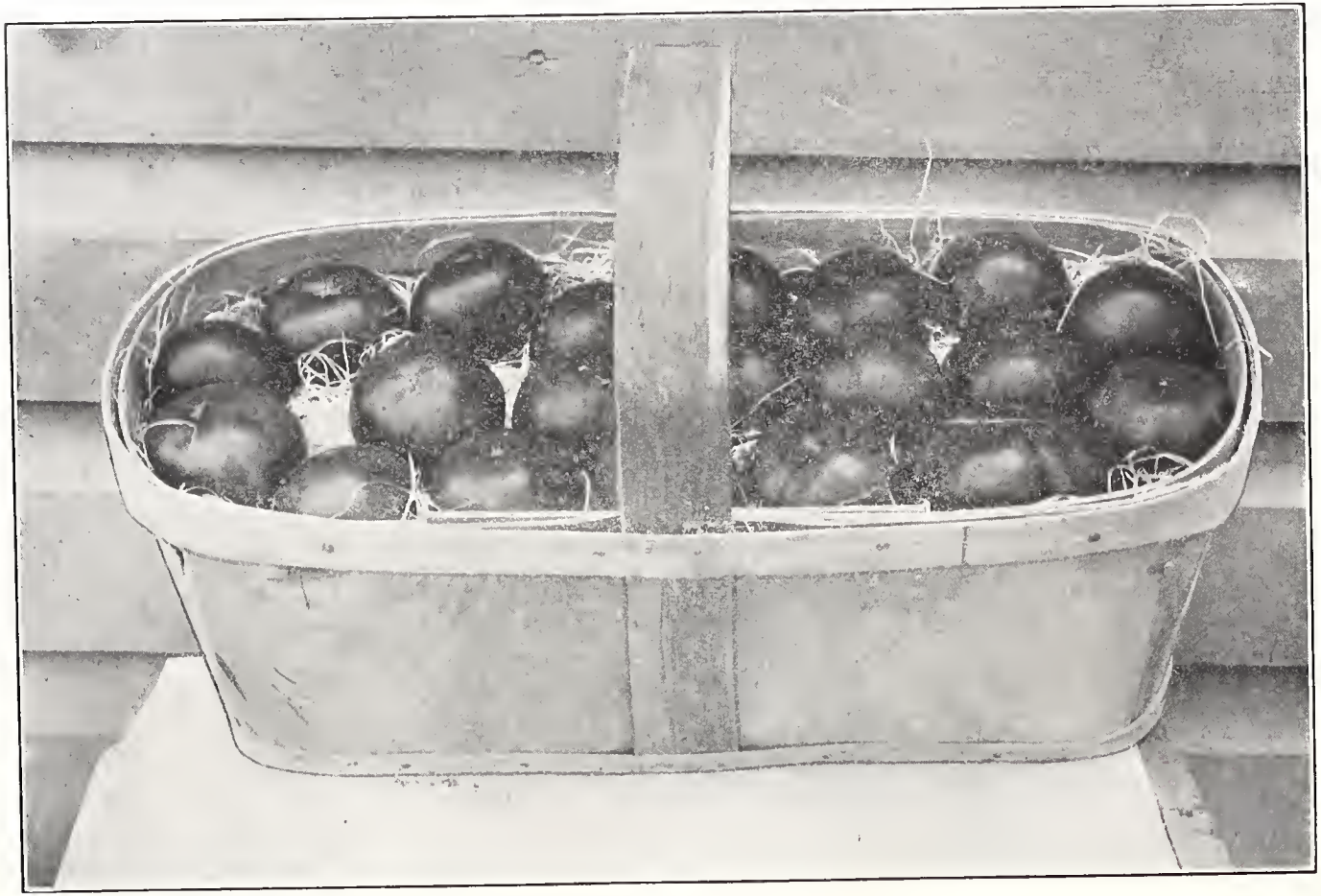

Fig. 15. Hothouse tomatoes.

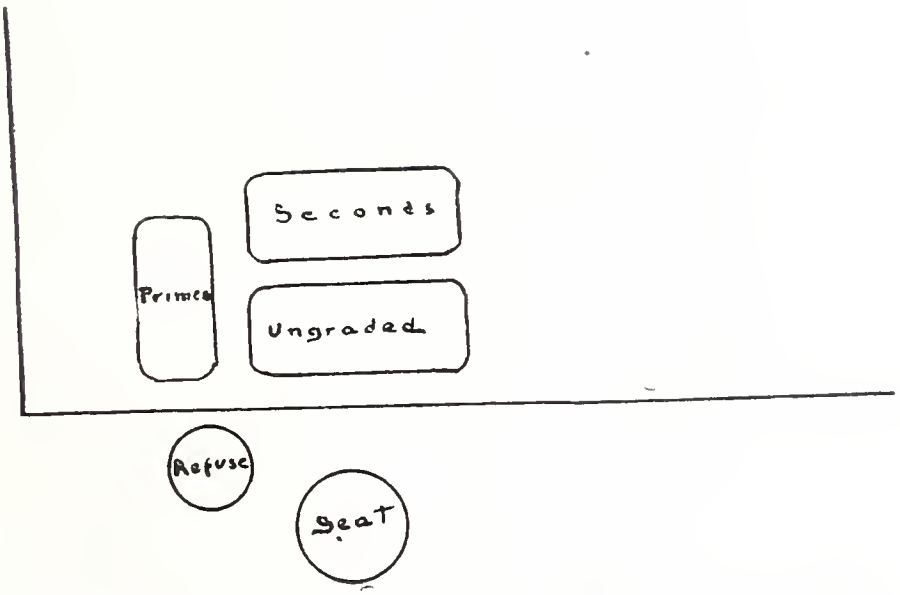

Fig. 16. Arrangement of baskets for grading and packing tomatoes.

Fig. 17. Grading table. A lining of old carpet or the like would prevent bruising.

Fig. 18 In a Pennsylvania orchard.
(Courtesy of Prof. J. P. Stewart.)

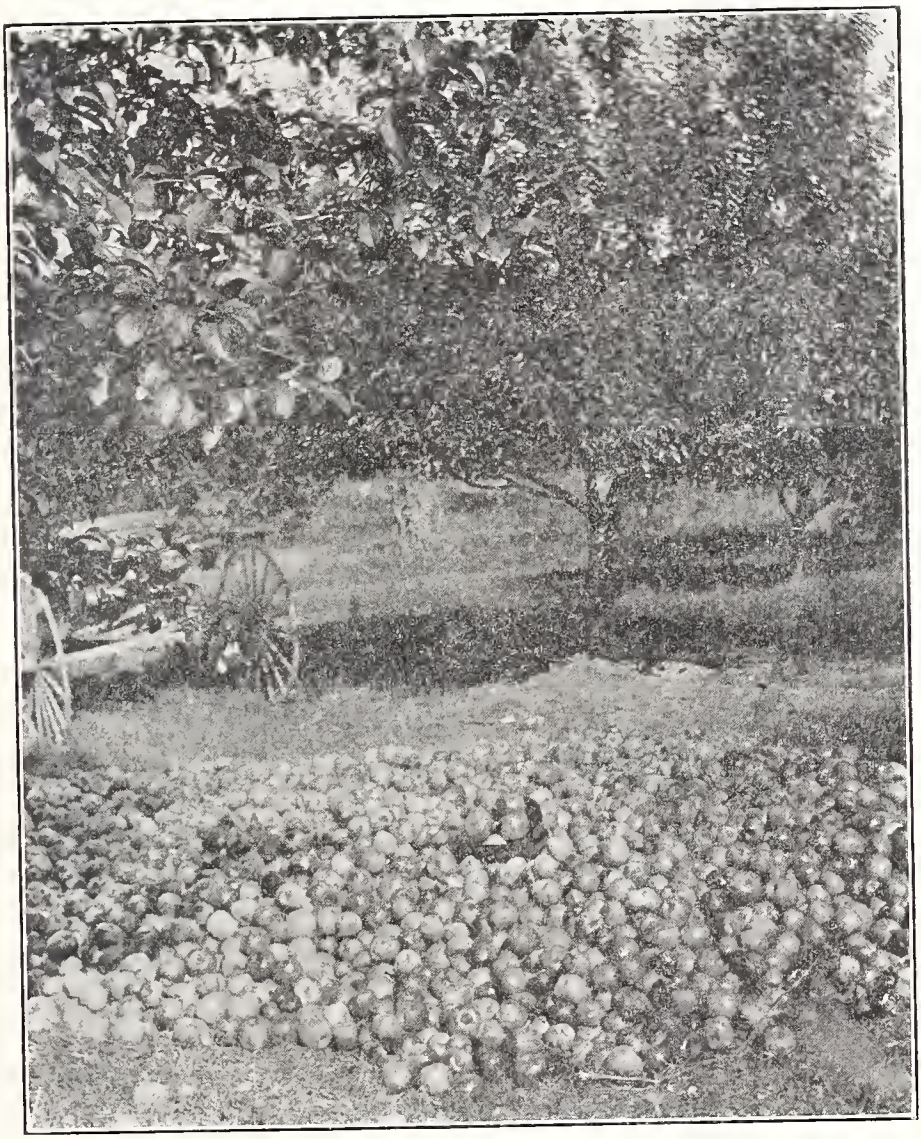

Fig. 19. This method of caring for fruit is no longer approved. It results in bruises and is costly of labor.
(Courtesy of Prof. J. P. Stewart.)

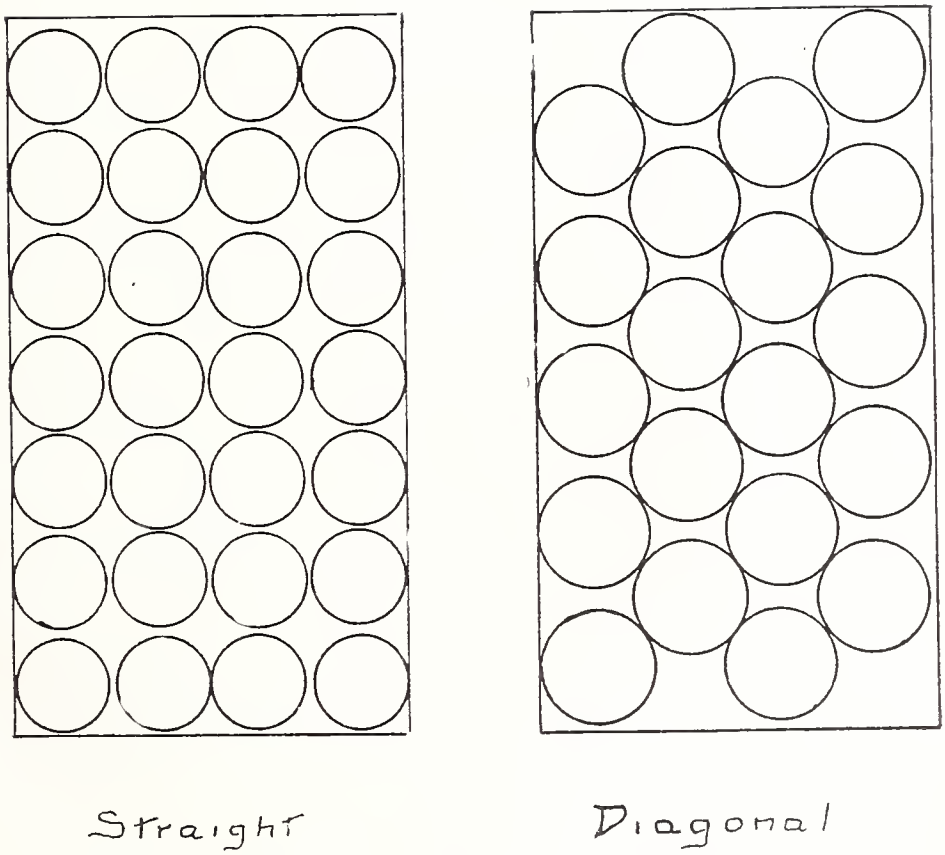

Fig. 20. Diagrams of box packs.

CHAPTER III.

TRANSPORTATION.

ADVANTAGES OF A SHORT HAUL.

The cost of transporting produce from farm to market is a great barrier between the producer and the profit that should be his. It presents a question that must not be neglected in choosing a farm. Other things being equal, it will pay to locate as near the consumer as possible. Yet, other considerations, as cheapness of land, or particularly favorable cultural conditions, may draw the prospective grower from his market. If the railroad or the steamboat are to be used, it is just as important to make the haul to car or dock as short as possible. While the consumer may in one sense truly be said to pay the freight on what he eats, yet freight, cartage, and commission are deducted from the producer's returns, and a long haul by rail or water is decidedly unprofitable.

TRANSPORTATION BY WAGON.

It may be said in general that wagon transportation is costly. This is very evident if calculations are made on a ton-mile basis. The distance that may be covered both ways in a day is about the limit of profitable hauling with most produce. Yet Long Island growers make considerably longer trips. The skilled marketman drives out from New York with the empty wagon and meets a driver from his employer's farm with the next day's load. The limit of profitable hauling depends somewhat upon other transportation facilities. Thus, in one case in Western Pennsylvania, it was found more profitable to haul eight miles and ship on the main line than to haul but one mile and ship on a branch.

The choice of equipment for marketing depends upon a number of factors. First, the nature of the roads. If the region is hilly and the roads are rough smaller wagons must be used than if the country is level and the roads are of the best. The wagons shown in Figure 26 and 27, are in use in the outskirts of Philadelphia, and are built to carry three or four tons. Mr. Charles Voss, Elmhurst, Long Island, has a market wagon upon which he can load a hundred and ten barrels. Second, retail trade is best served by a compara-

tively small wagon, conveniently arranged to afford ready access to the various fruits and vegetables. For this class of trade, medium weight horses are best, as they make better time from house to house than the heavier ones. Quick starting and stopping, as well as good training in other points, are much to be desired. If sales are made to retail dealers, the same considerations hold to a lesser degree, while hauling for shipment or to wholesalers, or to a public market are best accommodated with heavy wagons and draft teams, as illustrated.

In the third place, the kind of produce to be marketed and the kind of package to be used must be considered in planning the wagon. Very different beds are required for the convenient hauling of crates and peach baskets. There will usually be opportunity for the display of considerable ingenuity in designing an outfit in which all the packages to be used can be economically loaded. Figure 28 shows the movable rack used about Wilkes-Barre for the accommodation of uncovered peach baskets. The growers of Burlington county, New Jersey, use a wagon with slanting sides in which the tiers of fourteen-quart reinforced peach baskets just fit. The upper layer is set with spaces between the rows and baskets are slipped into the spaces, thus bringing the load to a ridge.

There are several general considerations that are not to be forgotten in securing equipment. First, cheap wagons, horses, and harness represent poor economy. Breakdowns cost in time, produce, and repairs. The writer knows of a wagon weighing eighteen hundred pounds, of two ton capacity, and purchased at a cost of $175 which withstood seven years hard marketing over unusually rough, hilly roads. At the end of that time it was overhauled and was then good for at least as many more years. The annual repair bill was almost nil, excluding of course paint and tires. .High grade horses are reliable, powerful and durable. They eat no more than poor ones and are a source of great satisfaction to both owner and driver. Neatly harnessed to a clean, well-painted wagon, such a team makes a splendid advertisement.

Second, an unhandy wagon means increased expense. Every detail should be planned for convenience. The wagon should be easily mounted and dismounted, hitched and unhitched. The brake lever should be easily reached and easily worked. The load should be accessible. The front wheels should by all means cut under, and yet the bed should be as low as possible.

Third, every possible provision should be made for the comfort of the driver. The market wagon must make its trips rain or shine and the top should afford as good protection as a buggy. Employees appreciate an interest in their welfare and make ample repayment in loyal service.

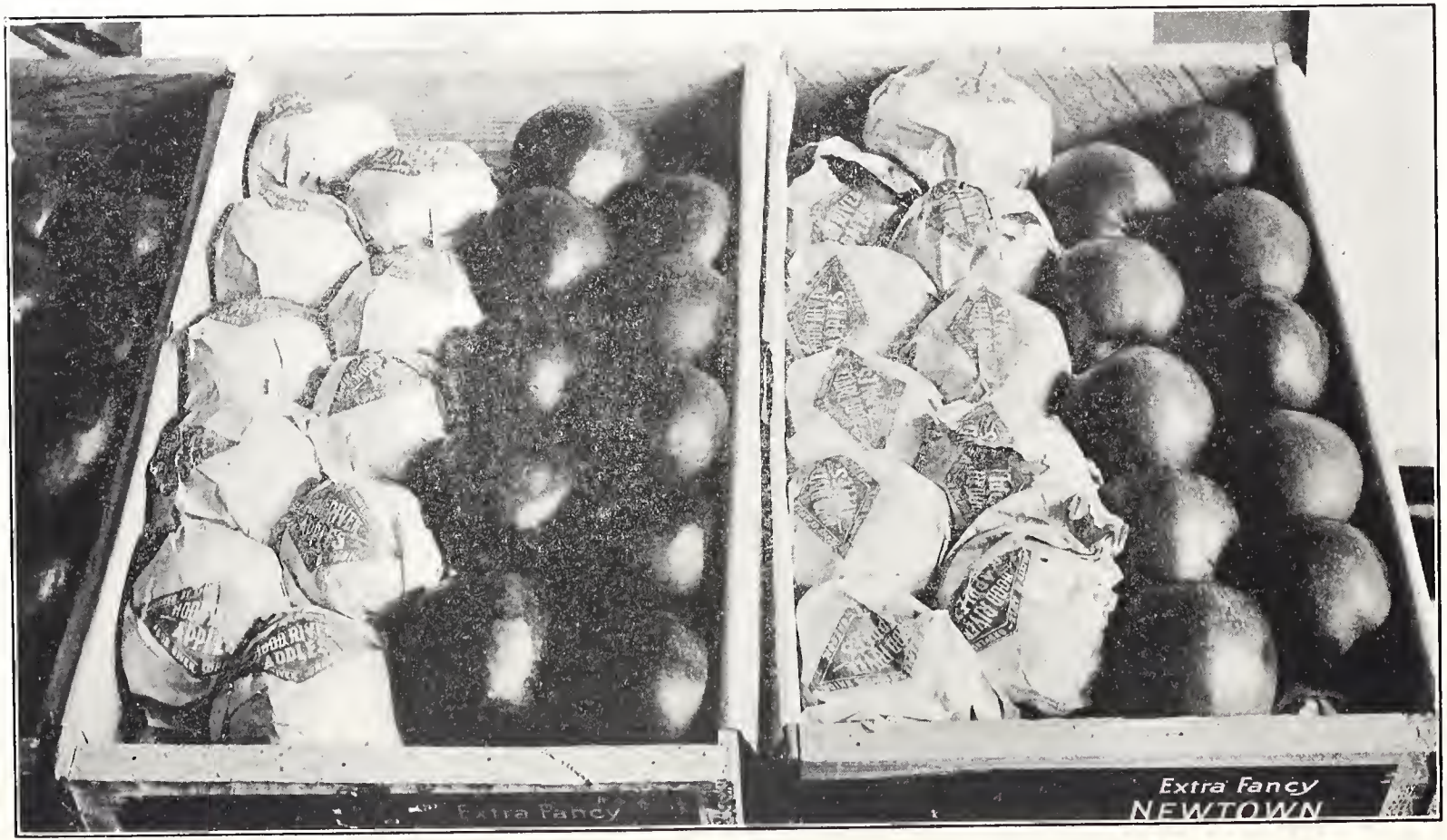

Fig. 21. A farmers' Western pack.

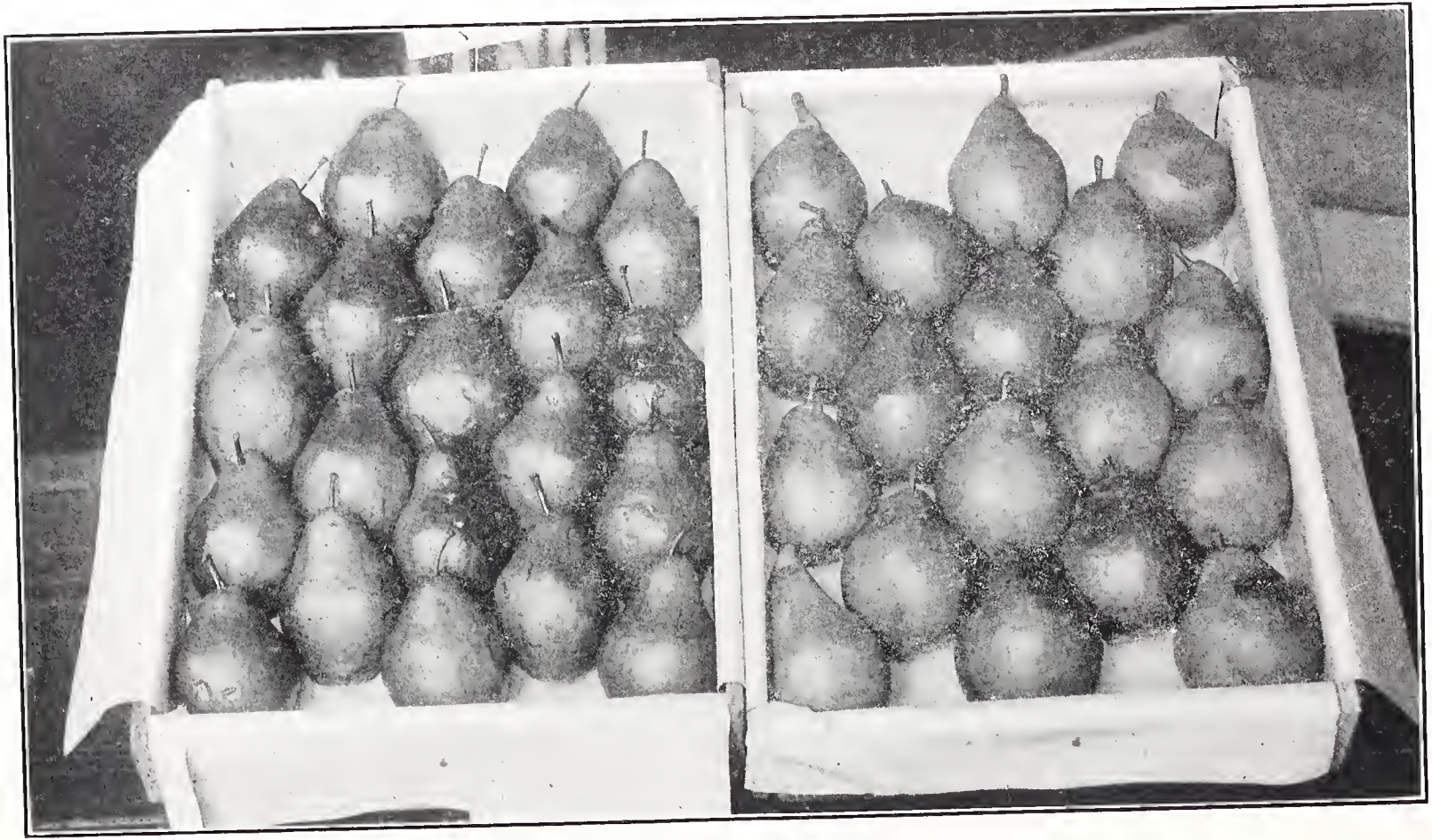

Fig. 22. Pears packed beautifully are from Idaho.

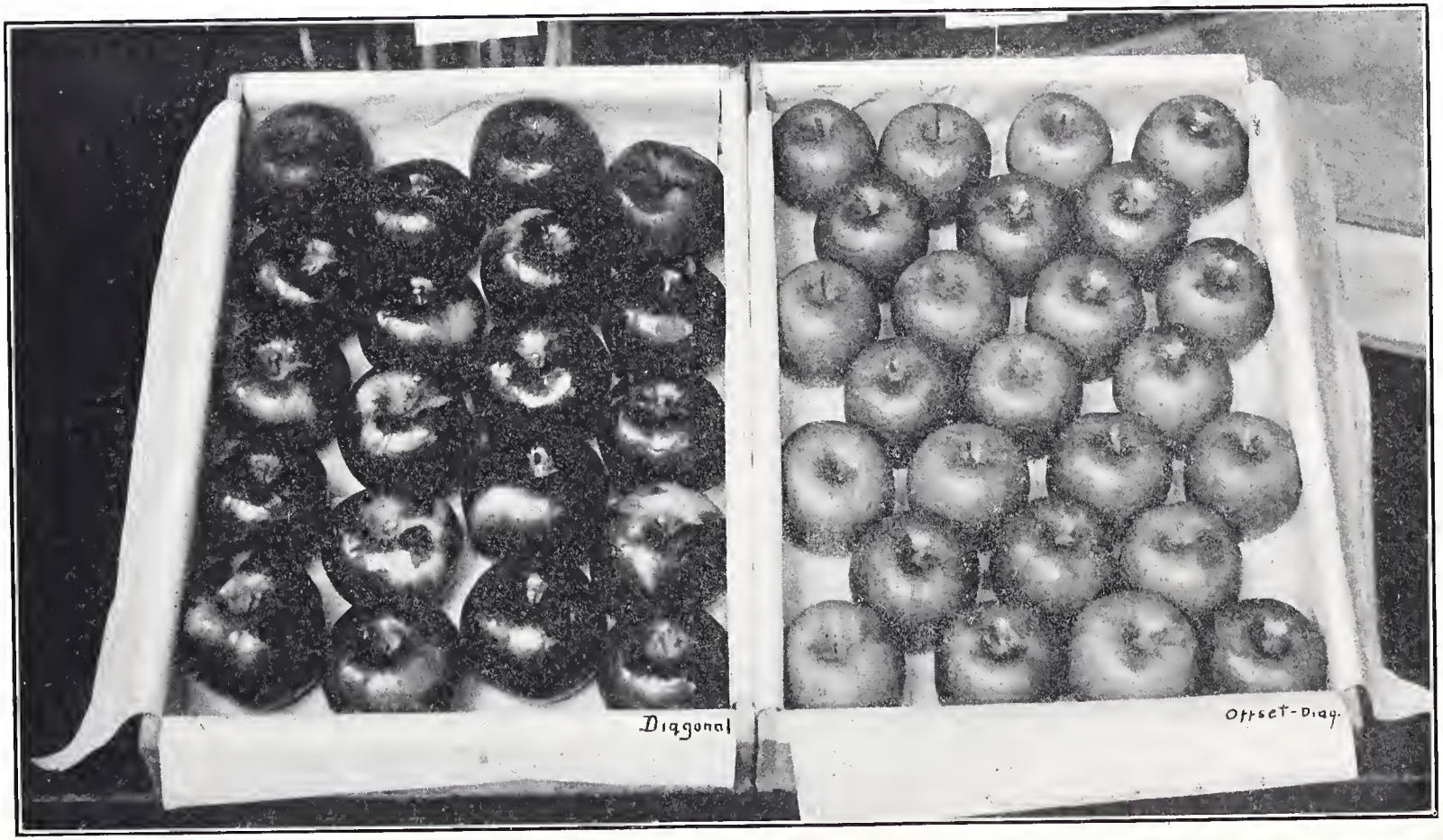

Fig. 23. Apples from Council, Idaho. Too much empty space in the offset packs.

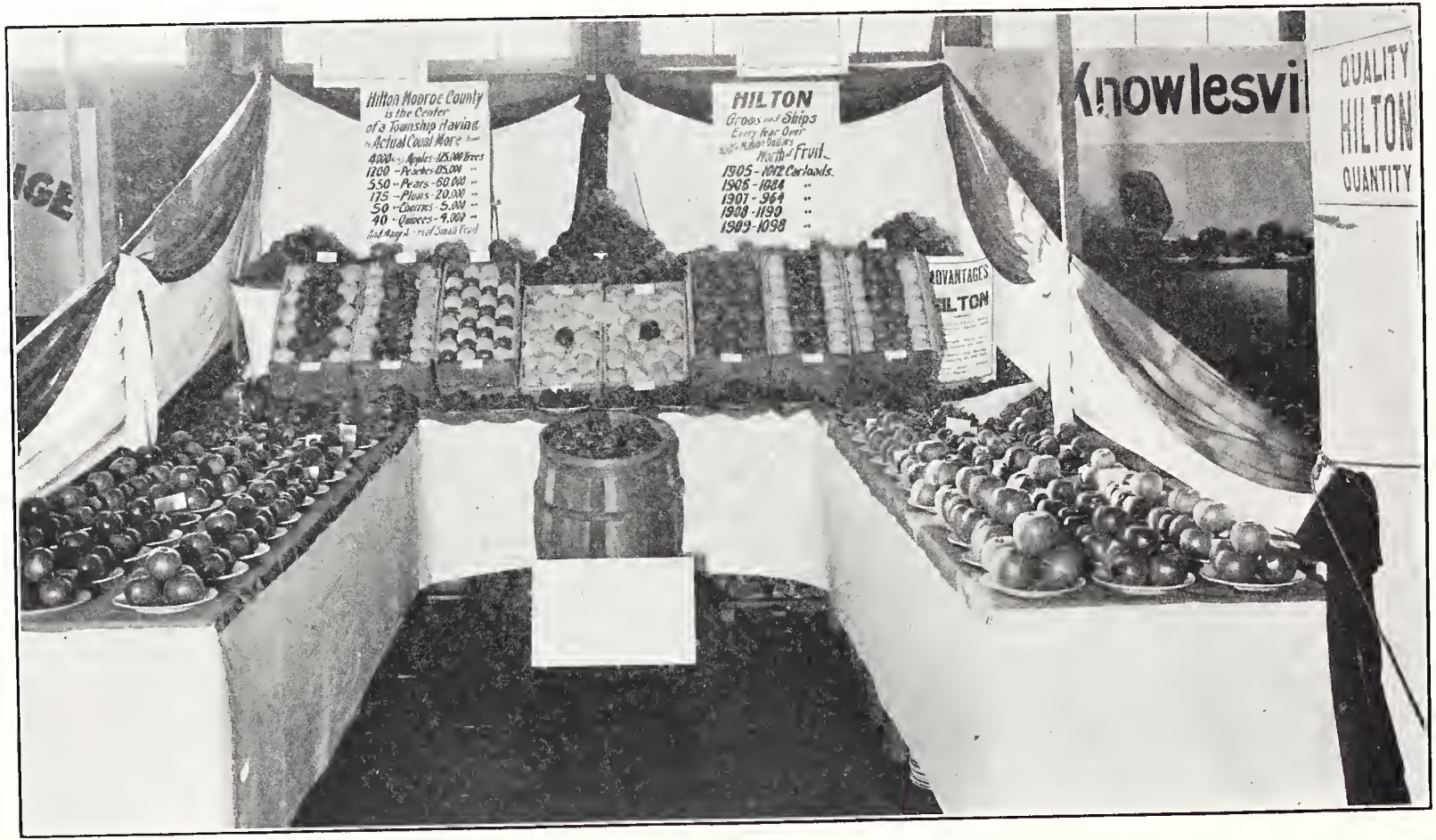

Fig. 24. New York grows box apples. Two straight packs on the right.

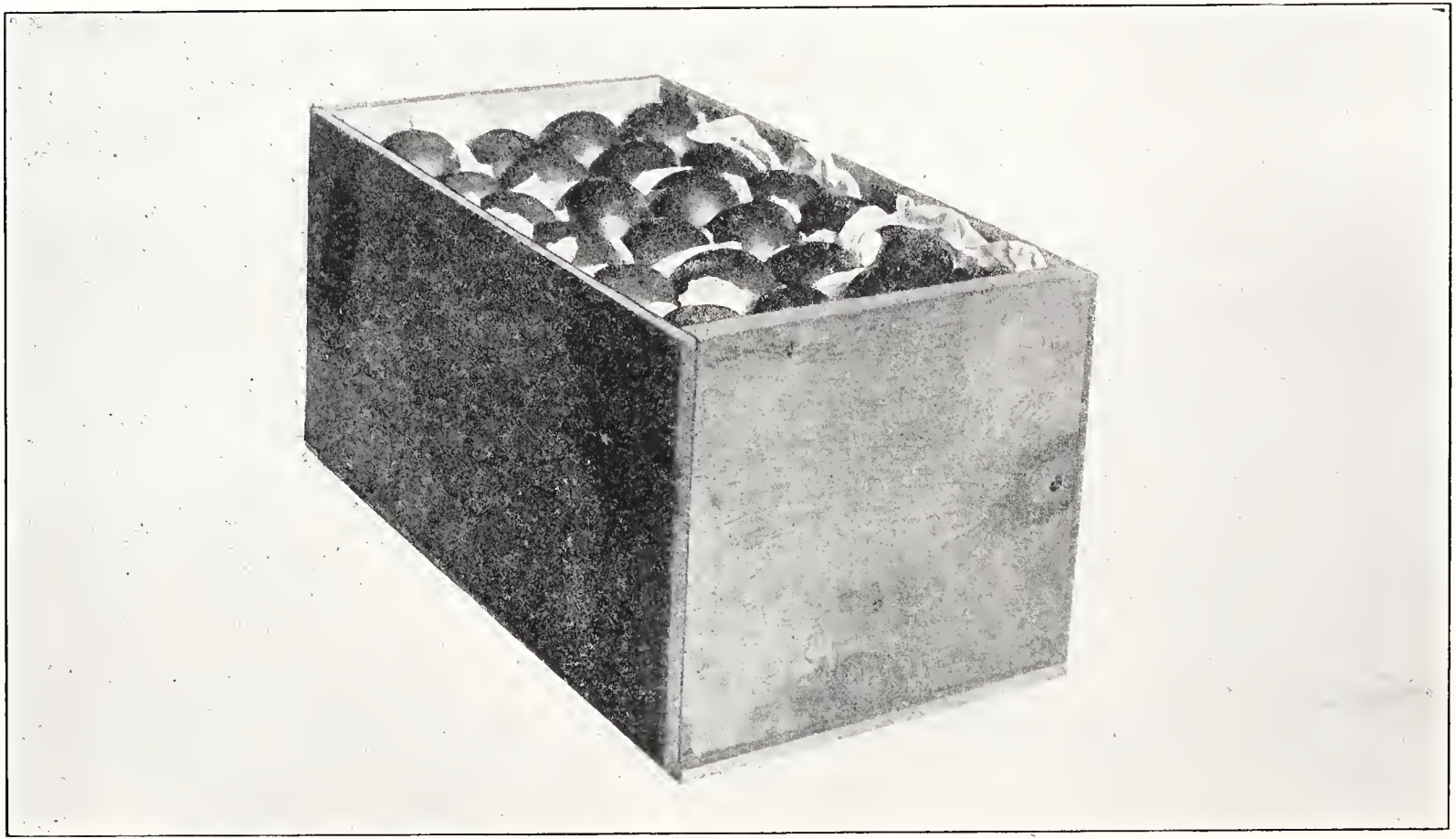

Fig. 25. Good apples badly packed. The box is not crowned and is built as to permit a bulge.

Fourth, plan a wagon and plan it right. Then make all the others like it. Interchangeable parts, especially wheels, save many a delay. If beds are of standard dimensions, no time is lost in figuring out a loading plan for every trip—a detail that counts.

MAINTENANCE.

As indicated above, an attractive appearance is a valuable asset. Many gardeners who care for the niceties of the business devote Saturday afternoon to washing wagons, cleaning harness and putting everything in trim. The horses deserve the best of care. Nothing contributes so much to a sleek appearance, as well as to good condition, as faithful grooming. Haste to reach market often leads to neglect in this matter—a neglect that can be ill afforded. Time can be saved in the morning by thoroughly rubbing down at night. Thus, with good bedding, little attention is required before hitching.

Frequent painting pays both from the standpoint of appearance and of preventing decay and rust. The twist and strain of the road tend to open the joints, letting in moisture and dust. Paint effectively seals these cracks and crevices, preventing the deterioration that is certain to follow upon neglect.

TRANSPORTATION BY AUTO-TRUCK.

The automobile truck has within the past few years been brought to such a state of efficiency and reliability as to give it a place among marketing vehicles. It offers the advantages of quick service with heavy loads over long hauls, at a maintenance cost but little higher than that of a good team and wagon. Nor does the auto require feeding through the winter. In view of the greatly increased loads, with little if any increase in wages, it would seem that this means of transportation must represent real economy. Some of our progressive producers are already using machines and as soon as it is evident that the motor truck can offer thoroughly reliable service at low cost, their use will become quite general. Philadelphia commission houses are in some cases taking up the work of hauling, sending huge cars to Jersey to gather loads from the growers. Figure 29 shows a one-ton "Autocar" hauling a load of seventy-two peach baskets from the farm of Mr. Richard Wood, of Conshohocken, Pennsylvania, to the Philadelphia market.

TRANSPORTATION BY RAIL AND WATER.

During the last few decades, as shown in the introductory paragraphs, there has been a remarkable increase in the amount of produce that is shipped a long distance. This tendency, which has by no means ceased, has occasioned the development of highly specialized facilities for rapid transportation.

Railroad lines about New York, and to a lesser extent about other cities, establish each season special schedules for the handling of fruit and truck from the farms of neighboring counties. Cars are distributed among the sidings in the morning, to be loaded in the afternoon and evening. The train crew starts at the terminus of its route, and gathers up its load, reaching the city about midnight. Teamsters then distribute the produce among the consignees. In certain sections of New Jersey, Delaware and Maryland, a very few stations give an engine all it can haul. I have in mind one branch of twelve miles on which a full train is made up every evening for the thirty mile run to Jersey City. Others are still busier; stations that are ordinarily insignificant becoming veritable marts of commerce.

With the ever-increasing network of electric lines that are penetrating almost all sections of our country, the trolley freight is destined to play a more important part in the work of marketing. Farmers will locate their packing houses by the track so that a short spur will enable a car to back up to the loading platform. Similar spurs in the wholesale centers of the cities will make possible the delivery of goods at the door of the warehouse, thus eliminating costly wagon hauls at both ends.

For comparatively short distances, the little coasting steamers offers to those who are within hauling distance of tidewater the advantages of low rates and better ventilation for the produce while in transit. Even a few hours in a close hot car are decidedly detrimental to fresh fruit or vegetables.

Mr. L. B. Hallock, of Orient, Long Island, owns a steamer with which he markets his crops. By this means he can dispose of his produce in any of the cities that lie along the coast from Boston to New York. Figure 30 shows a gasoline barge which Mr. Hallock uses for marketing during the busy season, as well as for the conveyance of supplies.

Long distance shipping requires more complicated provisions for safe carriage. Fruit or produce is no longer taken directly from field to car, but is pre-cooled in special refrigeration plants. It is then shipped in well iced cars on fast through freights which often rival passenger schedules. In hot weather, re-icing by the way becomes necessary. Fruit and truck often come North in cars that have taken meat South, thus securing better rates than if the cars had to be sent empty to the loading stations. The same cars are used in winter as their walls are well insulated and very severe weather is required to freeze the contents.

Very little has been done by way of a study of freight rates on this class of goods. It seems that in many instances excessive charges are made, both for transportation and for special service, as

Fig. 26. A Philadelphia market wagon. (Courtesy Prof. J. P. Stewart.)

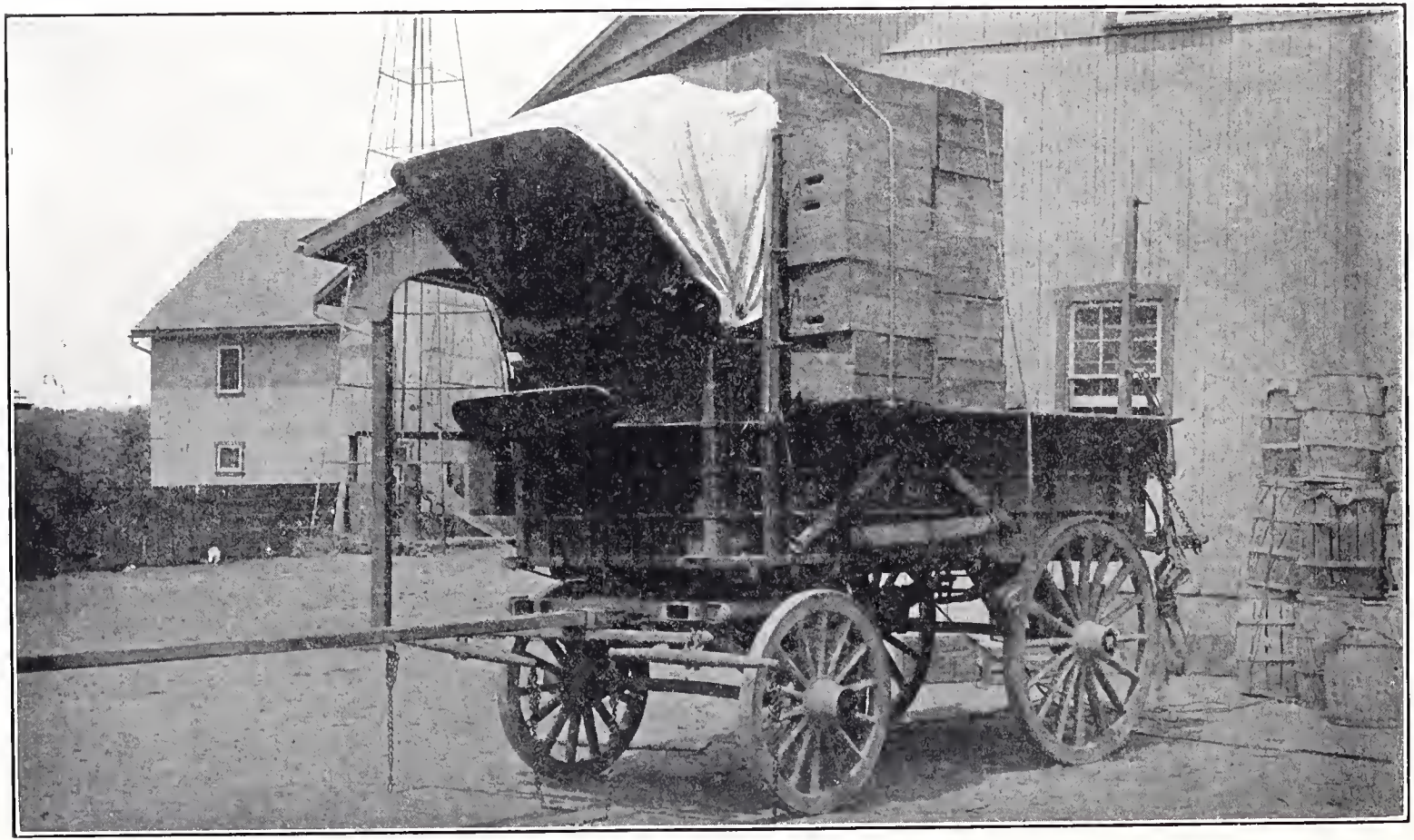

Fig. 27. Ready for a load. (Courtesy Prof. R. L. Watts.)

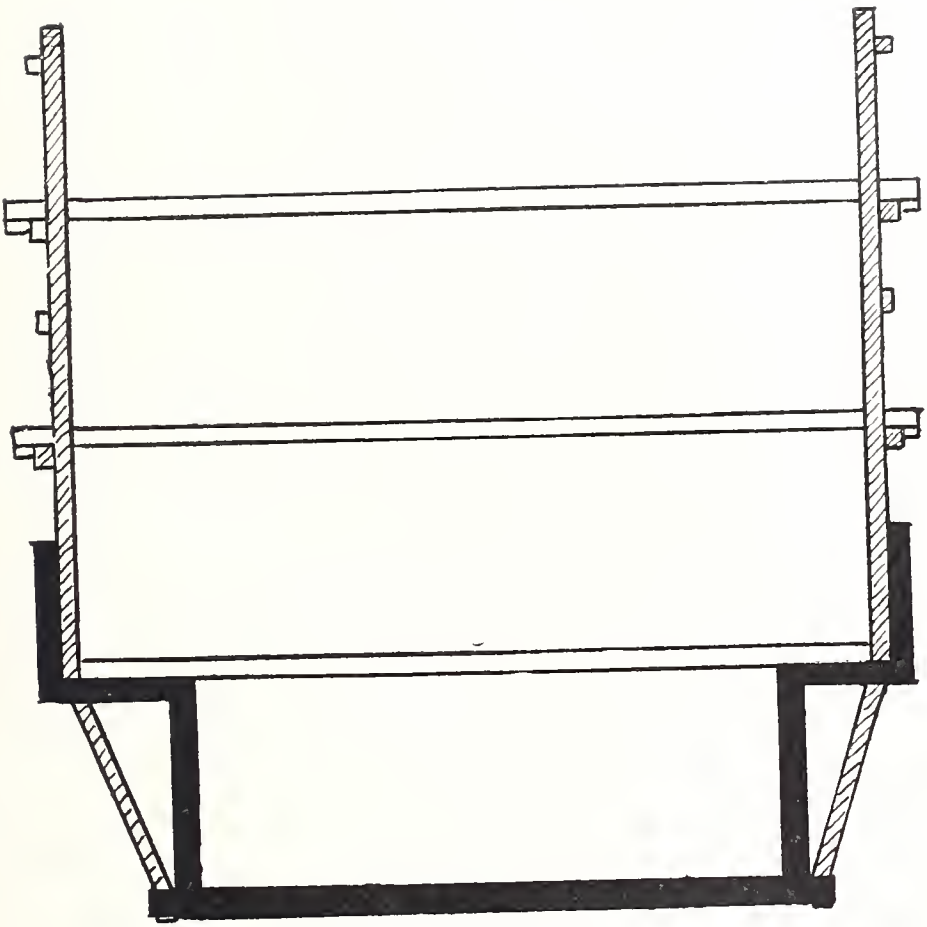

Fig. 28. Movable rack for hauling produce in baskets

for the use of refrigerator cars and for icing. It would also appear that some sections are enjoying more favorable rates than others. Here is room for a thorough investigation.

Since this paragraph was written, the Vegetable Growers' Association of America has undertaken a careful study of transportation conditions and will ere long be ready for action.

CHAPTER IV.

DISPOSITION.

IMPORTANCE.

We have so far had much to say of the advancement that has been made in the preparation and handling for market of horticultural products. All the efforts and energies and skill of the grower are exerted in activities that culminate in the selling of his crop. He might better leave his fields untilled, his crops unharvested if he has not the ability to turn those crops into gain. He must realize more than he has expended, or his efforts are fruitless. Here as before, the problem presents itself in many phases. Questions arise—questions that can only be decided in the light of an intimate knowledge of markets and methods.

TOPPING THE MARKET.

We are not producing too many vegetables, certainly not too much fruit. Profit, then, depends upon the skill of the seller in avoiding the market where abundance and low prices prevail, and in finding the market where there is scarcity and where higher prices will be realized. And, having found the right market, the grower should be able to secure the highest current price.

A regard for certain principles will be helpful in "topping the market." The first is high quality. The best is always in demand. The second is to have goods to sell when the other fellow has none. It pays to get on the market early in the season, taking advantage of high prices, and establishing a trade. On the smaller markets the customer will not quickly desert the grower who has served him early. Even if sales are made on commission in a large city, a brand soon becomes known and is looked for. Third, good varieties are more readily sold than poor ones. The flat dweller may not be able to tell much of the difference between Spy and Ben Davis apples, but if he finds that the mention of the former name brings good fruit, he will continue to ask for it, and increasing knowledge will place him past deception. The fourth point, and one of the most important of all, is familiarity with all available markets. The telephone is indispensable and should be freely used. A very slight increase in prices will pay a very large telephone bill.

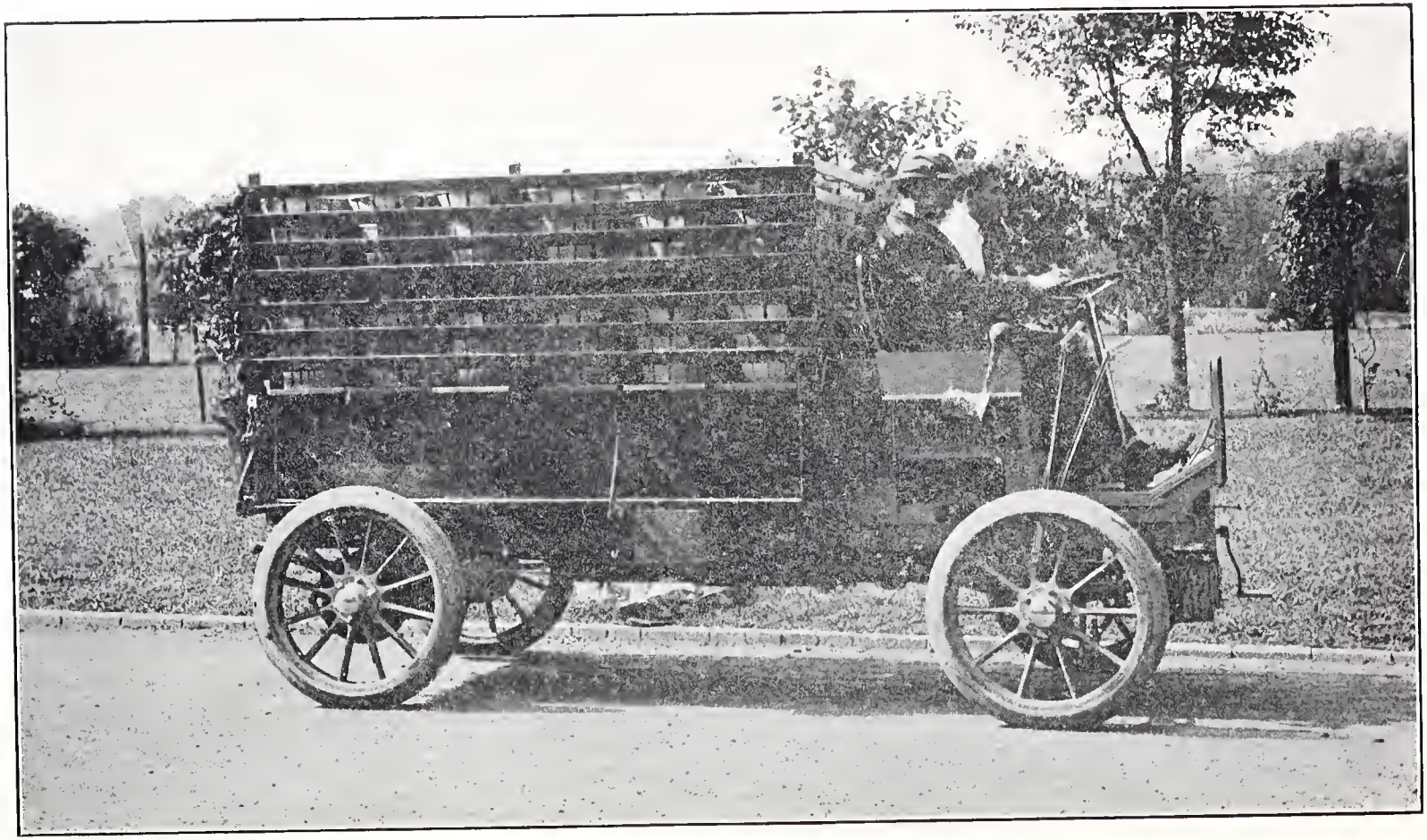

Fig. 29. The modern way. (Courtesy Auto Car Co.)

Fig. 30. A. market boat. (Courtesy Prof. R. L. Watts.)

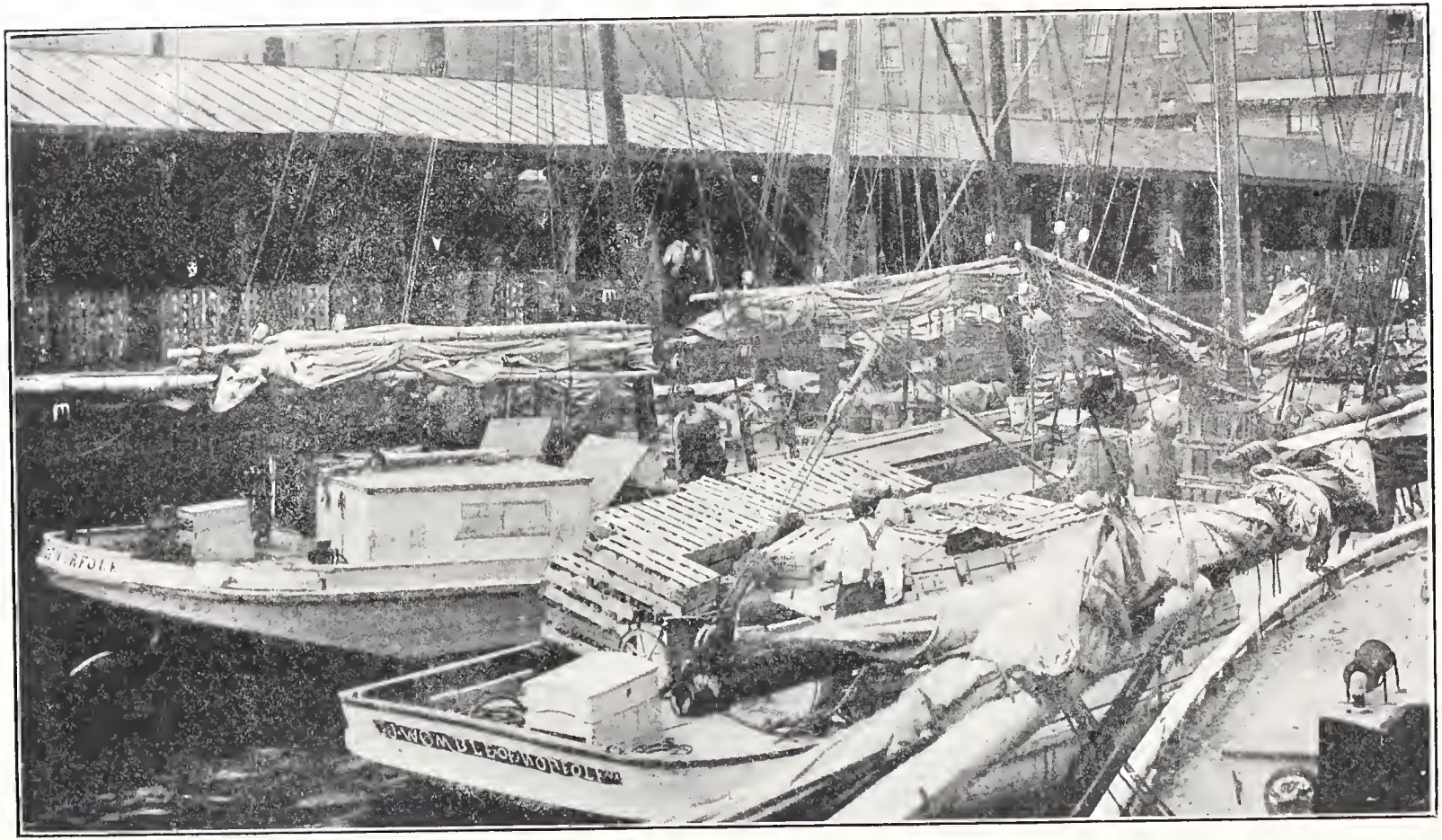

Fig. 31. Norfolk "market wagons." These have gasoline engines as well as sails. (Courtesy Prof. R. L. Watts.)

DELEGATION OF SELLING TO AGENTS.

The grower must decide whether he shall himself sell his produce or leave the task to another. The first method is impossible for the man who is distant from market, except so far as buyers come to him. It is most desirable for the man who disposes of a comparatively small quantity. Many a grower, realizing that selling is a business in itself, prefers to entrust his sales to another who makes a specialty of such work. He is thus free to devote all his energies to the activities of the farm. In the large cities it is doubtless true that the commission merchant possesses notable advantages in selling that cannot be enjoyed by the producer.

SELLING TO THE CONSUMER.

The retail trade appeals strongly to many growers who produce only on a moderately large scale. It offers splendid opportunities for the development of the niceties of marketing. Every package must please and little trade-getting devices bring prompt returns. As a reward for his trouble, the farmer takes to himself the profit of the middleman and the green grocer, as well as the profit of the producer.

It is absolutely essential that the produce present an attractive appearance to the purchaser. It must be perfectly graded and neatly arranged on the wagon. A half dozen sweet peas, or a peony with each sale costs but little and helps make a friend of the customer. Nothing counts for more in this respect than the manner of the salesman. One of the greatest drawbacks in the retail trade is the difficulty of securing good salesmen. A man must first be honest, he must put his whole heart and soul into his work, and he must be patient, cheerful and clean. Here again the employer who is able to inspire enthusiasm and loyalty is a winner. His men will get far better results in this sort of work than those who care nothing for the "old man."

The late Honorable R. W. Schwarz, of Analomink, Monroe county, Pennsylvania, was particularly successful in marketing to retail trade under unusual difficulties, or rather under difficulties that prevent most farmers from growing truck at all. Having gone to the country for his health, he soon found his strength returning and his land producing more than the small towns nearby could consume. He accordingly established wagon routes among the hotels and cottages of a neighboring summer resort region. Of recent years he had kept three teams busy covering a radius of twenty miles from his home. Prices were good and the business was highly profitable in spite of exceedingly heavy marketing expenses.

Advertising pays. Neat, catchy announcements of new vegetables and fruits are real trade-getters. People are encouraged to try products that they have not used before. They may be instructed in the merits of special varieties, or introduced to new methods of preparing for the table. Consumption of horticultural products is rapidly increasing and well directed newspaper "ads.," such as the ones shown in Figure 32, will materially aid in encouraging the tendency.

Peary and Cook

Chasing each other around the North Pole have kept it so warm that at this writing we have had no frost. Consequently we have now the finest sweet corn of the season.

Plenty of ripe and green tomatoes. Elegant celery, cauliflower, etc.

It is not time yet to store winter vegetables if you want them nice and tender, but please give us your order at once.

Apples every day.

Choice broilers and roasting chickens.

You are hungry for the goods; we are hungry for the orders; let's connect.

VALLEY FARM

L. H. SHELDON, FAIR HAVEN, VT.

Winter Vegetables

Sooner the Quicker Now

White turnips, yellow turnips, carrots, table beets 50c per bushel, five-bushel lots $2.00.

Splendid celery. Let us put a box in your celler right now.

Red and common cabbage, onions, potatoes, cauliflowers, etc.

Apples are in short supply but of course we have them, finest that can be grown.

Broilers and roasting chickens.

Any man who grumbles at the prices we make would find fault if he were to be hung.

VALLEY FARM

L. H. SHELDON, FAIR HAVEN, VT.

Fig. 32. "ADVERTISING PAYS."

Mr. H. B. Fullerton, of the Long Island Railroad Experimental Stations, has devised a method of selling "from farm to family fresh" which does away with the peddling a feature that is always more or less objectionable. He uses a crate 10 inches deep, with bottom of $10\frac{1}{2}$ by $21\frac{1}{2}$ and top of $13\frac{1}{2}$ by $24\frac{1}{4}$ inch dimensions respectively. It holds six ordinary four-quart baskets, with a division between the two tiers. This "Home Hamper," as it is called, is packed with a variety of vegetables according to the season. The illustrations describes the Hamper far better than words. The vegetables, as is readily seen, are of the best, and are carefully packed, using paraffine paper quite freely. The Hamper is shipped direct to the family in New York, express paid upon receipt of a dollar and a half. It is its own best advertisement and it has become so popular that Mr. Fullerton is unable to meet the demand. There seem to be very few families that are not pleased with the Hamper as it is packed, although a few have standing orders for the omission of certain vegetables. The good price received makes the device a most profitable one, while it does not increase the cost of produce to the consumer.

There is a wide diversity of opinion as to the value of the Home Hamper as a marketing device. Some growers in other sections have adopted it and are enthusiastic over its merits. Others declare that

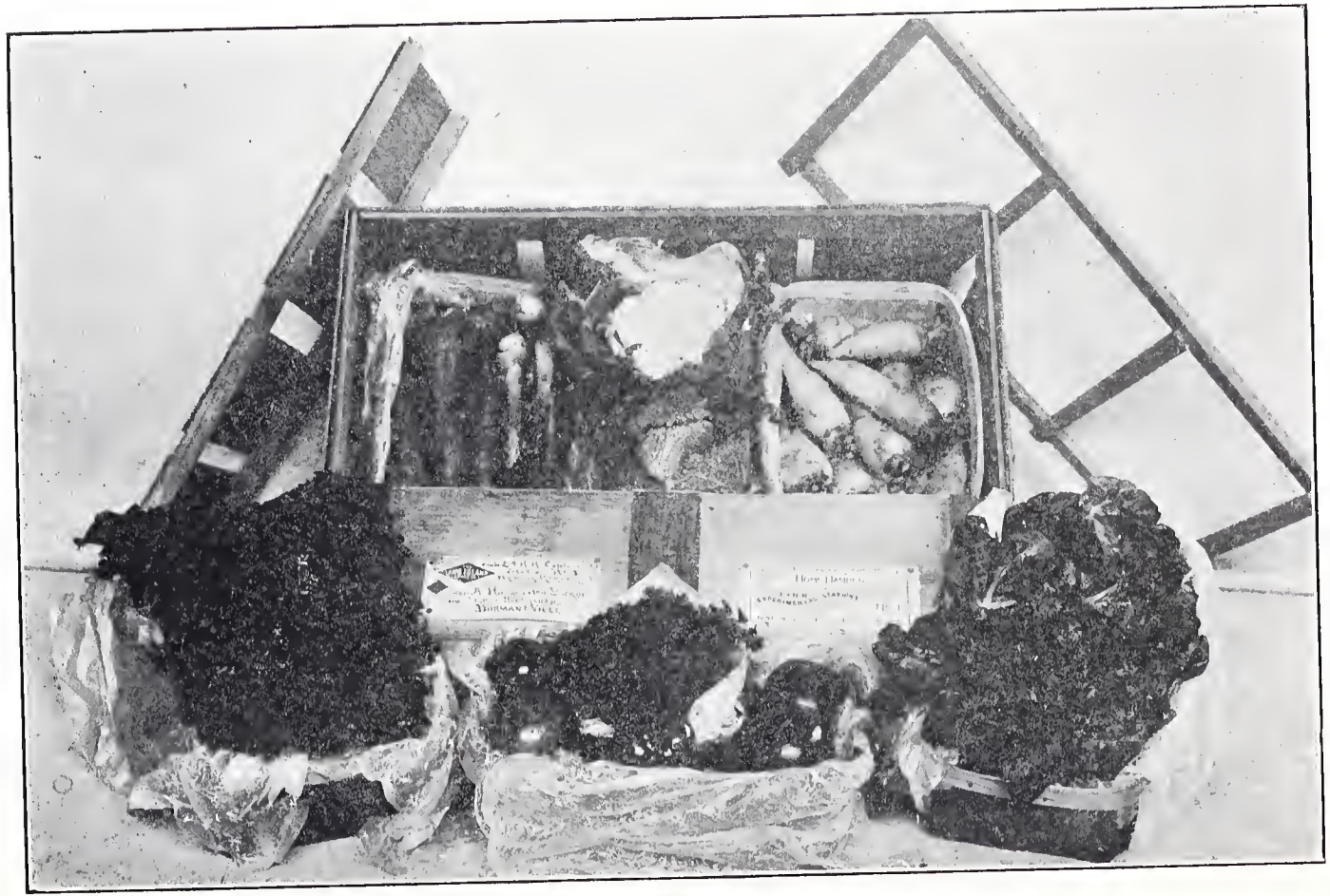

Fig. 33. The home hamper. (Courtesy H. B. Fullerton.)

Fig. 34. Another home hamper. (Courtesy of H. B. Fullerton.)

the scheme is not practical, save under exceptional conditions. Objection is raised on the ground of inconvenience in packing a mixture of vegetables in a single container, though it is doubtless true that the extra profits much more than pay for the extra labor. It is certainly true that the hamper idea has been a great success with Mr. Fullerton, and it should be thoroughly tried out before it is condemned.

SELLING TO THE RETAIL DEALER.

The sale of farm products to the retail dealer may be said to represent the happy medium in marketing. Inconvenience is only slightly greater than when the wholesale dealer is the purchaser, and prices are considerably better. A splendid opportunity is afforded for the establishment of a valuable local trade based upon a reputation for the highest grade of produce in the best possible condition. This method of marketing is more largely practiced in the smaller cities than in the great centers, but it would doubtless be profitable to many farmers near even such large cities as New York and Philadelphia to establish routes among grocerymen, delivering goods each morning and perhaps taking orders for the next. The most serious drawback to this plan for the large producer is the difficulty in securing reliable and successful salesmen.

The shipment of fruits and vegetables to retailers in the smaller cities and towns has proved profitable to most of the very few that have tried the plan. It often happens that such places are paying comparatively high prices when the larger markets are glutted. During the summer of 1907 a western Pennsylvania grower found his city market unwilling to pay satisfactory prices for cabbage. He accordingly sent the writer on the road among the smaller towns and cities to take orders. No difficulty was experienced in selling cabbage during August at from one and a half to two cents per pound, when the wholesalers would not pay over 75 cents per barrel. After a few weeks the improvement of the city market rendered further pursuit of this course unnecessary, but it was evident that a route could be laid out to be covered in a week which would require at least three hundred barrels of cabbage alone, to say nothing of other vegetables. Such a trade would certainly grow and the salary of the salesman would be offset by a comfortable profit. The only serious drawback to this scheme is the difficulty in holding business in face of competition from local growers who trade their produce for merchandise, though this is not as formidable an objection as might appear at first sight.

SELLING TO THE WHOLESALE DEALER.

The most extensive growers prefer to sell by wagon loads and car loads, thus relieving themselves of the labor and bookkeeping incident to the disposal of their products in smaller quantities. The commission merchant takes upon himself the whole selling side of the business. The grower hauls his produce to the station or dock and in due time receives a memorandum and check covering the selling price of the consignment less freight, cartage, and commission, the latter usually ten per cent. This method of disposing of horticultural products, when perfectly carried out is doubtless one of the best. In practice, there are many weaknesses in the system, due to failings on the part of both consignor and consignee.

The maledictions of the farmer are ceaselessly hurled upon the head of the commission man, charging deceit and fraud, while the commission man berates the farmer for low quality and dishonest packing. A study of the business makes it clear that each party to the conflict leaves much to be desired by the other. The consignee certainly has abundant opportunity for fraud and there are many who care nothing for their reputation. False reports of shortage and of goods in bad order, sales in which the same dealer is both buyer and seller, and countless other schemes are practiced. The farmer handles roughly, grades poorly, packs the bottom of the basket or barrel with culls, topping with primes, indeed, has almost as many devices of dishonesty as his friend of the warehouse. He will sell on his own local market as long as prices are good, and then, when the glut comes, will ship to the commission man and expect high returns. His business methods are often unpardonably loose.

With all the mutual maledictions that are voiced in conversation, through the papers, and from the platform, many of our best growers tell of most satisfactory relations with their selling agents. In the first place, these growers are careful in their selection of a dealer. He must be honest, alert, and successful. Having made their choice, they place themselves upon pleasant business relations with him, enjoying mutual confidence. The grower does his best in growing and packing, knowing that thereby he will secure the highest prices. The dealer exerts every effort to sell his client's goods to the best advantage, in the hope that he may continue to enjoy the patronage of the producer. He knows that the slightest dishonesty or questionable return places his profits in jeopardy.

We must then conclude that the commission business is like all others. It has its men of unimpeachable honesty and it has its rogues. The farmer cannot expect to profit by fraud, nor to succeed while neglecting the precautions demanded by ordinary business

Fig. 35. Lettuce.

prudence. Nor can the dealer expect permanent success unless he inspires in his client that confidence which will enable him to make every shipment in the knowledge that his returns will be as great as the market can afford.

Laws have been advocated and government inspectors demanded, but the solution of the marketing problem lies rather in the adoption by the producer of sound business principles and the methods that bring success to the manufacturer and the merchant.

In the wholesale market quantity commands. The large producer fares best at the hands of the commission merchant. In the same way the sections that produce most heavily are able to market most advantageously. In some sections, of recent years, has been developed a method of disposing of goods that is perhaps nearly ideal. Buyers from the cities frequent the railroad stations and compete with each other in buying for cash in hand. Thus, the grower of berries may leave his farm at three o'clock, sitting on top of his day's picking of say a hundred crates. By six his team has brought him back with a snug roll of bills in his pocket, two hundred dollars being no very high price for such a load. Furthermore, he does the same thing the next day and the next. Again, the orchardist may be visited by a buyer who will contract for the whole crop on the trees, giving a certified check before picking an apple.

One of the most important tendencies in modern marketing is the development of the cooperative association, a subject worthy of a treatise as extended as this. The movement had its origin in the difficulties of the California fruit growers in securing satisfactory returns for their crops. Instead of sitting by and bemoaning their fate at the tender mercies of railroads and dealers, the producers, filled with the spirit of the West, united their forces in the fruit exchange and soon, having control of the things the people wanted, were able to command the market. The South ere long followed suit and, of recent years, the eastern producers have fallen into line. Today hardly an important producing center is without its organization for the cooperative sale of products, as well as purchase of supplies.

Space fails for the discussion of the up-to-date methods of these associations that are doing so much to better the lot of the horticulturist, of the employment of specialists as managers and salesmen, of the establishment and enforcement of standards in grading and packing, of the progress in branding and advertising, or of the constant use of the wires to keep in touch with distant markets. Nor can we consider at length the marvelous success that has followed upon their establishment, the prosperity that has enlivened decadent communities, the improvement in farm practice, the elevation of standards of county life, and all the other benefits that come with flourishing agriculture.

It is within the last few years less and less often true that a grower must dispose of even a portion of his produce at less than cost. As previously suggested, we as a nation need all of the fruits and vegetables that are annually produced. The devices of modern marketing are bringing about more and more perfect distribution, both as to place, and as to season. One agency not yet mentioned has been powerful in bringing about this result, namely, the cold storage warehouse. Fruit is gathered in the fall, graded and packed, and shipped to the city, where it is stored amongst a network of icy pipes which hold the temperature at about thirty-five degrees Fahrenheit. It is thus kept in perfect condition, at the owner's order, until a satisfactory offer is received, be it in November or the following June. During the winter just passed a grower of Adams county, Pennsylvania, realized five dollars and a half for apples, while neighbors were satisfied with two dollars and a half at the orchard.

To some extent growers have built cold storage houses of their own, although city rates are now so low that the practice is not as popular as formerly. Winter shipments are also decidedly hazardous.

CANNING AND EVAPORATING.

The canning factory has saved many a grower from loss. These establishments stand with doors open and machinery ready to begin the work of preserving as soon as the market falls to a certain point, when the grower, instead of following the city road, turns aside to the little low building at the edge of the village. True, prices are not high, yet a profit is yielded to the good farmer and he is furnished an outlet for his surplus produce. Hardly a crop but may be so utilized.

A recent number of the Market Growers' Journal is devoted to the home canner as a means of saving the surplus. True, canning is a business of itself, yet it can doubtless be made of value to many a grower who has not access to a factory. The following paragraph from the paper just mentioned summarizes the advantages of farm canning:

"It requires no skilled labor, no experienced foreman, and the grower can realize double the profits of the larger factories. The work, while requiring careful, diligent attention, is light and can be successfully carried on by women and girls, furnishing them profitable home employment, and possibly serving as an aid in the solution of the problem now so widely discussed, of how to keep the boys and girls on the farm. The outlay for the farm canner is small and the machines are extremely simple."

A Tennessee producer reports an outlay during one year of $378, not including interest, with gross returns of $974.50. The outfit need not represent an investment of over fifty dollars. Another producer states that he finds canning tomatoes more profitable than selling at fifty cents per bushel.

Evaporation of fruit offers the same advantages to the grower as canning. In the western states the produce of thousands of acres is marketed in this way.

CHAPTER V.

CONCLUSION.

We have traced the development of marketing as a means of deriving from crops the highest possible material returns. We have considered the principles that are fundamental in the art and have studied the methods that are practiced by those horticulturists who have achieved success. We have found that the solution of the problems involved in the most advantageous disposal of produce requires the widest knowledge, the most careful study, and the mastery of details well nigh innumerable, all combined with the highest business acumen.

We have seen that there is still room for progress in the future no less marvelous than the progress of the past. Many important questions remain unsettled and the majority of producers fall far short of practicing the best that is known.

The progress that has been made has brought the field nearer to the city dweller, setting his table with ever increasing variety, so that not a day of the year need go by without its offering of fruit or vegetable, fresh and crisp from garden or greenhouse. It has vastly improved the lot of the farmer, not merely swelling his bank account, but, by assuring him profitable returns, it has encouraged him to better methods of production. It has enabled him to live better, leaving more and more of the labor to his helpers, and enjoying more fully the luxuries of country life at its best. It has enabled him to give his family the advantages they deserve, relieving his wife of drudgery and educating his childen. Best of all, it has enabled him to bring up his sons and daughters in a life that they are loath to leave, preferring the independence and bounty of the country to the glittering attractions of the city.

It is for these things, then, rather than for the mere accumulation of dollars, that we welcome the marvelous advance that is being made in marketing, and we endeavor to hasten the progress of the future that the farmer may come into the full enjoyment of the heritage that is his.

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